A PLAN TAKES ROOT

BROCKTON URBAN AGRICULTURE

THE CONWAY SCHOOL

+

TENSEN KILDUFF

PREPARED FOR **THE CITY OF BROCKTON**

WINTER 2017

BROCKTON URBAN AGRICULTURE PLAN

Prepared for the City of Brockton Department of Planning and Economic Development

Andrew Kilduff Tim Tensen

The Conway School

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EXECUTIVE SUMMARY

A CITY POISED TO ACT

Galvanized by a proposed and contentious urban chicken-keeping ordinance, residents of Brockton, Massachusetts, are looking to improve quality of life and landscape through urban agriculture. In other cities across the United States and beyond, urban agriculture has brought diverse urban communities together, humanized vacant and derelict sites, grown nutritious produce that reduces household food expenses, and provided valuable job training and educational opportunities.

Food and agriculture are deeply political. The ability to grow food is affected by social and environmental justice, climate change, property rights, and global economic and political conditions. To grow one's own food in a city is a revolutionary act shaped by issues of race, class, gentrification, and urban renewal, complex issues that require multifaceted approaches.

Brockton's history of industrial and residential development has significantly reduced available open space and agricultural land in the city, while degrading ecological function and the integrity of extant ecosystems. It is clear from assessments of current conditions in Brockton that repurposing of land for agriculture will be necessary in Brockton and that there are serious concerns about the availability, suitability, and implications of doing so. This may lead city officials, entrepreneurs, and other food systems advocates to consider investment in relationships with agricultural enterprises regionally and emphasize other aspects of the food system such as processing, because the infrastructure in Brockton may be better suited for it.

Following industrial decline, a pattern of white middle class out-migration to the suburbs and in-migration of diverse immigrant communities has created a vibrant, young, and diverse community with large Cape Verdean and Haitian populations. Currently, these communities are becoming more involved in political decision-making and continuing this trend will be vital to the success of any urban agricultural efforts.

Brockton is seeking innovative means to improve the quality of life of current and future residents by addressing the conditions left in the wake of its industrial past and honoring its rich and dynamic history. There are numerous residents, institutions, and organizations currently involved in this work, including: faculty and students producing food at Brockton High School, the long-standing, family-owned Gerry's Farm, the Farm at Stonehill, many dozens of home gardeners, the Good Samaritan Hospital, and a weekly seasonal farmers' market to name a few. The city faces the challenge of integrating these diverse activities, increasing the number of agricultural operations, and maximizing the social, environmental, and economic benefits provided by urban agriculture. Expansions proposed in the Brockton Urban Agriculture Plan would repurpose spaces as diverse as vacant lots, school grounds, vacant industrial and commercial space, residential lots, and private and public open spaces.

The vision for urban agriculture in Brockton, shared by residents and policy-makers, will require patience and collaborative effort to realize. Based on the examples set by other cities around the country and in Massachusetts, including Springfield, Boston, and Somerville, these efforts will greatly benefit from supportive political infrastructure to sustainably expand food systems-based work. Building on this understanding, the Brockton Urban Agriculture Plan concludes with a set of recommendations to guide these policy-making and community building efforts.

RECOMMENDATIONS FOR THE COMMUNITY

1. **Expand community participation** and increase outreach.
2. **Establish coordinating councils** for urban agriculture and community planning.
3. **Build on education** by integrating urban agriculture with the Brockton school system.
4. **Ensure access to land** for urban agriculture enterprises and activities.
5. **Protect and conserve land** used for agriculture or that may support agriculture in the future.

INTRODUCTION

PROJECT OVERVIEW

WHAT THIS DOCUMENT DOES

This document explores the existing food network throughout the city and establishes recommendations for building a vibrant urban agriculture network. This document also explores conceptual scenarios for applying these urban agriculture models in Brockton.

FINDINGS OF THIS DOCUMENT

Throughout the history of Brockton, local environmental and political conditions favored industrial development over agricultural development. Today, there is only one remaining commercial production farm within the city. Further assessment of political, social, and environmental conditions confirmed that there is little to no substantial opportunity for developing commercially viable agriculture in the traditional sense. This has lead to the preliminary conclusion that the benefits of pursuing urban agriculture in Brockton may be social and that any agricultural models will be either smaller scale, non-traditional, or based on expanding existing efforts. However, there is potential for developing economic models that meet other needs of the food system such as processing, marketing, and distributing. The recommendations focus on the social and political actions that may support sustainable agricultural development within Brockton.

WHO THIS PLAN SERVES

The primary audience for this document is the citizens of Brockton. This report is a planning tool for decision-makers and community organizers, planners and residents, backyard gardeners and farmers, teachers, and city officials. The intention of this document is to support community members in creating and expanding urban agriculture in Brockton. Community members can use the recommendations section of this document to aid in the development of organizations and sound planning strategies.

GOAL DEVELOPMENT

The project was initiated by the Department of Planning and Economic Development to investigate the potential for agricultural development in Brockton. After a period of community input and dialogue this initial request was refined into four community goals to guide the investigation.

COMMUNITY GOALS

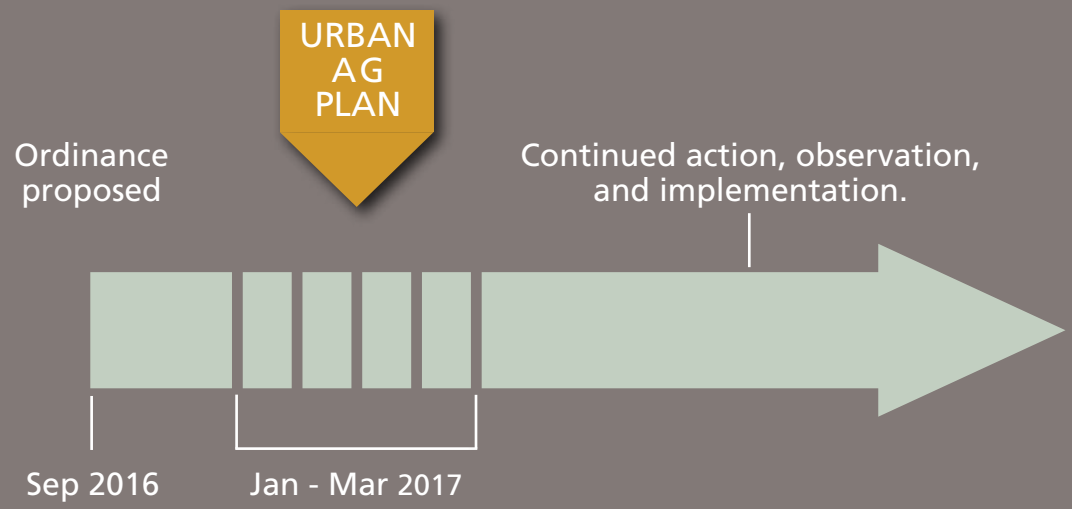
1. Access to land for food production
2. Link agriculture with education
3. Conserve, protect, and restore environmental assets
4. Develop new partnerships and enhance existing connections

Residents of Brockton respond to the question of who gardens at home, at the first community meeting.

Photo source: Andrew Kilduff

WHERE THIS PLAN STANDS

This three-month planning project was designed to lay the framework for ongoing efforts to implement and support urban agricultural efforts in Brockton. It covers current events in Brockton related to urban agriculture, and recommends actionable steps for building community, developing policy, and forging consensus around implementing urban agriculture in Brockton. It is understood as a component of a multi-year process.



WHY CONSIDER URBAN AGRICULTURE IN BROCKTON?

Urban agriculture can benefit and contribute to Brockton in many ways—building community through collaboration, creating active and beautiful public spaces, providing opportunities for education for all ages, and enhancing relationships among individuals, organizations, and government.

MAKING OF A MOVEMENT

The decision to pursue a comprehensive urban agriculture plan in Brockton was made in response to a proposed update to the livestock section of the animal ordinance in 2016. This proposed amendment provoked and aggravated feelings of frustration among some community members. The planning department suggested as a tool for reconciliation a comprehensive assessment of current practices and a reform of agricultural policy in the city. As Sarah Schindler argues in "Unpermitted Urban Agriculture",

> "Property law has a tendency to get stuck in old patterns, and thus needs to be shocked from time to time." (2013, p 387)

The Brockton Urban Agriculture Plan is intended to further the dialogue between community and government so that policy and practice of urban agriculture in Brockton can be aligned.

CHICKEN LITERATURE REVIEW

In the past few years, Brockton has seen a growing population of urban homesteaders who are raising chickens and other livestock. Chicken keeping, for eggs and meat, has become increasingly common in many American cities. However, current data indicates that doing so does not increase food security and safety, as many proponents cite (Pollock 2011). This is because costs associated with keeping backyard chickens likely negate any financial savings, such that experts believe perceived economic benefits should not be the main reason for keeping chickens (Pollock 2011). When chicken keeping is restricted to backyards (as it is in the urban context), homeowners or renters with ample yards and a certain level of financial capacity are favored, leading to the conclusion that the "impacts of backyard production on personal or community food security seems, for the time being, to be a hypothesized rather than measurable effect" (Pollock 2011, p 736). This reality shifts the conversation away from food security. Raising chickens may not dramatically improve food security but it does create opportunities to help youth cultivate stewardship skills, carry on family tradition, and gain the psychological benefits of getting outside and participating in the food system (Pollock 2011). Also, public health officials agree that keeping backyard chickens poses no greater threat to public health than the keeping of dogs or cats, and that any threat of transmission of avian influenza or salmonella is low and significantly mitigated by education and regulatory strategies that promote proper care and maintenance of flocks (Pollock 2011). This understanding suggests that even though public health is not anymore endangered by chicken-keeping than it is by other domesticated animals, lack of access to knowledge and experience, like exists to support dog and cat owners, may mean that educational support would be an important part of responsibly implementing a chicken ordinance.

A thorough analysis of chicken ordinances across the country make it clear that no two ordinances are alike but all should be approached from the perspective of "What are the good components and considerations that make for a just and functional chicken ordinance in our community?" (LaBadie 2008, p 12). Suggested considerations when drafting a chicken ordinance include:

- It satisfies the needs of most stakeholder groups and acknowledges that some stakeholders on both sides of the issue will be unwilling to compromise.
- It does not discriminate against certain populations, such as those of lower incomes who can not afford high permitting fees, or those with smaller property sizes.
- It allows for flexibility and provides choice, such as giving chicken keepers the right to choose their own coop design and building materials.
- It allows for citizen input and participation in the ordinance forming process to assure that the ordinance fits the needs of, and is supported by, the community.
- It recognizes the importance of the ordinance being clearly stated and easily accessible to the public, which will help ensure compliance.

CHICKEN DEBATE

Can you keep chickens? How many square feet of space do you need per chicken? What about rodents attracted to waste? What should be done about free-range, wandering chickens?

A 1927 ordinance forbade keeping pigs and roosters within the city but left a wide latitude for all other animals. In 2016, the city tried to fine some chicken owners, though many fines have been rescinded after acknowledgement that there are no clear requirements or regulations in place. At a recent meeting, one City worker claimed, "many people [are] throwing coops up and not caring for [them] properly" (Enterprise). These issues have led the three-member Board of Health to begin drafting an updated ordinance.

At the first hearing on October 4, 2016, the Health Department proposed an ordinance to require 7,000 square feet for six hens and 10,000 square feet for nine hens with a fifty-dollar, three-year permit (Enterprise). This follows a precedent set by over 88 U.S. cities. Members of the community present at the meeting fell into two camps: current chicken owners who resisted new regulation, and those who felt that regulation was necessary to preserve quality of life. The vast majority supported continued chicken ownership.

After a follow-up meeting on November 1, 2016, the Board of Health determined that continued public input was necessary to develop a form of regulation that works for everyone. The Board also made it clear that this proposed regulation could be amended in the future. The fears that many chicken-owners have voiced are: 1) It has taken the city nearly 100 years to change the last ordinance; why should they believe there will be a timely update in the future? 2) If the City cannot enforce current laws effectively, why are they creating more, especially ones that limit those who are raising chickens appropriately without issue? It was at this meeting that the Department of Planning and Economic Development announced that it was going to be preparing an Urban Agriculture Plan to support both urban homesteading and commercial and hobby farms. The plan would also include recommendations and guidelines for fowl, bees, and small livestock. The Brockton Board of Health decided to delay any further investigation or ruling until the completion of the Brockton Urban Agriculture Plan, which would provide context and resources for more informed and reasonable regulations.

Photo source: The Enterprise

Photo source: The Enterprise

Photo source: The Enterprise

Photo source: The Enterprise

The Enterprise newspaper's chicken ordinance headlines.

HISTORICAL CONTEXT

Photo source: Brocktonsgreatmigration.com

Photo source: Wikimedia Commons

Brockton's many shoe factories employed over 13,500 people in 1920 (above). Downtown Brockton circa 1920 (right).

AN INDUSTRIAL LEGACY

In the nineteenth century, Brockton rapidly established itself as a major industrial hub, hosting the leading shoe industry in the United States. The region, and especially Brockton, enjoyed rising affluence, high employment, and improved city services fueled and funded by industry. Before 1880, the city had installed one of the first municipal sewer systems in the country; connected with the region via telegraph; produced Thomas Edison's first-of-its-kind, three-wire, underground electrical grid; and installed an expansive telephone network. By 1890, Brockton had an electric streetcar system to shuttle workers from outlying neighborhoods to the industrial districts and downtown core with dozens of parks and open spaces (Trends, OSRP, History). By all accounts Brockton was one of the wealthiest, most productive, and fastest-growing cities in the region. Between 1880 and 1920 the population grew five-fold to over 65,000; thirty-nine major shoe and boot factories and dozens of smaller factories employed more than 13,500, or one-fifth, of Brockton residents (Trends, Boot and Shoe).

However, shoe factories, forges, and tanneries were permitted to expand and operate virtually unchecked; Brockton's once heavily forested landscape had been cleared and pristine waterways served as dumping grounds for detritus from the shoemaking process. Public outcry over concerns for the well-being and aesthetic value of the city paralleled the national trend of city beautification. This led to Brockton's City government passing their first zoning ordinance in 1920, establishing four land-use districts and associated building standards limiting agriculture to areas outside the city's urban core (Trend, COB 1920 ordinance).

In 1927, Brockton drafted a related ordinance further restricting farm animals to the city's periphery; to this day it remains the only ordinance pertaining to livestock and has since been amended to include provisions for dogs (BOH Interview). To augment the city's open northern spaces, Daniel W. Field donated 756 acres on the border with Avon to the city as D.W. Field Park, designed by Frederick Law Olmsted and his son John Charles (Land Use Trends 2016).

By the Second World War, Brockton had reached its pinnacle as an industrial leader. Repeated economic hardships, such as the Great Depression, the recession of the early 1970s, and the Great Recession of 2008, contributed to Brockton's industrial decline and hampered sustained recovery. A multitude of regional, industrial, climatic, and cultural shifts put additional pressure on Brockton, which is struggling to recover from the decline that precipitated the exit of the shoe industry from the 1920s through the 1970s.

BROCKTON TODAY

Brockton today embodies the classic traits of a post-industrial city: white flight to adjoining suburbs; an influx of non-white immigrants; a declining tax base; shrinking of the middle class; abandonment of industry; industrial degradation of its natural resources; a languishing economy reliant on remaining industries; and a city budget stretched to its limit (Frey 1977). Brockton's capacity to provide services to its many neighborhoods and 95,000+ residents is hindered by administrative hurdles and personnel shortages. A two-year term for city administrators (mayor, City Council members) limits the effectiveness and follow-through of city-wide decision making; many plans drafted have simply never left the drawing board or have faltered as they lack long-term management critical for successful implementation. Brockton may epitomize the reality of many American declining urban centers: a tectonic shift is necessary to reverse these trends.

To establish a new vision for the city, Brockton needs to come to terms with the changes that have occurred in the city over the past 90 years since the adoption of the zoning ordinance: reconciling the loss of industry and the lasting impacts it has had on open spaces and public health, the demographic change and significance of this in political and social forums, the results of unrestricted development, and the growing local food movement. This Urban Agriculture Plan is an attempt to reconcile these weighty and complex issues by asking the question: What should agriculture look like in the post-industrial city?

Photo source: masshistory.com

Shoe factories were a dominating feature of Brockton's industrial landscape, including the famed W.L. Douglas factory (above).

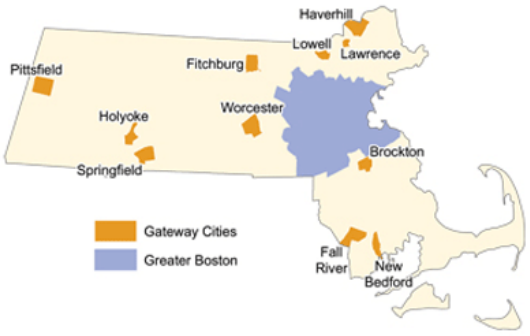
Photo source: Wikimedia commons

COMMUNITY PROFILE

As will be discussed in later chapters, successful and sustainable urban agriculture initiatives have tended to be community led and government supported, not the other way around. This underscores the importance of understanding Brockton's ethnic, economic, educational, and age composition when promoting planning initiatives, including an effort to promote urban agriculture.

GATEWAY CITY

Brockton is one of eleven state designated Gateway Cities. A Gateway City is defined as a municipality "with a population greater than 35,000 and less than 250,000, a median household income below the Commonwealth's average and a rate of educational attainment of a bachelor's degree or above that is below the Commonwealth's average" (MA legislature). Overall, Gateway Cities are likely to have populations with a greater proportion of immigrant residents, a recent history of economic decline, and outdated or dilapidated infrastructure and services.



Source: Brookings Institute

The first eleven gateway cities in MA.

Gateway Cities are considered areas of "unrealized potential." Assets common to Gateway Cities include major industries and institutions, strong connections to other urban hubs, and young, skilled populations. These cities provide a unique opportunity for newly arrived immigrants to establish a family or business, or pursue an education. Gateway Cities tend to see an increase in their immigrant populations as these urban hubs are places with affordable housing, employment opportunities, and strong educational networks (citation required). It follows that existing immigrant communities will be a strong component of a successful urban agricultural initiative.

POPULATION

Rapid changes in the social, economic, and environmental landscape have shaped Brockton. A period of exceptional affluence followed by economic downturn and deindustrialization over the last three-quarters of the twentieth century resulted in Brockton's current state as a post-industrial city with a dilapidated urban core, deflated commercial and industrial tax base, and demographic distribution where poorer minority populations live in the dense urban center and whites occupy the adjoining suburban neighborhoods. Residential development between 1950 and 1970 allowed for population growth, and beginning in 1980 an influx of immigrants from Cape Verde and Haiti grew the population to its peak of 95,172 (Pop Trends 2016). More recent immigration from Latin American countries contributed to the city's population increase, albeit minimally. Absent migration, Brockton's population is estimated to increase by 4,200, or 4.4 percent, by 2020 (Pop Trends 2016).

AGE

Brockton's population is younger than many other cities in Massachusetts. According to the 2010 U.S. Census, Brockton's median age is 35.1 years, 3.6 years lower than the state median age of 38.7 years (Pop Trends 2016). Brockton's population of individuals under twenty years old, at 28.6 percent, is higher than the state average of 24.8 percent, and higher than that of comparable cities (Pop Trends 2016). Brockton's senior community accounts for only 12 percent of the population, although is proportionally larger than comparable cities due to the presence of senior living and care

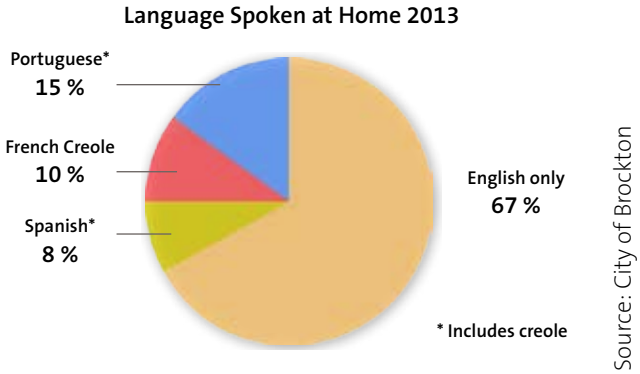
facilities (Pop Trends 2016). Brockton's status as a young city has implications that the voice of the youth in Brockton will be an important part of its identity and therefore decision-making.

RACE AND ETHNICITY

Brockton is an ethnically diverse urban hub; however, the distribution of race within the population has shifted dramatically over three decades. Beginning in 1980, Brockton's white population decreased; between 1990 and 2010 the white population declined 41 percent, a loss of 30,700 individuals (Pop Trends 2016). In contrast, Brockton's African American community has experienced explosive growth; in the same period the African American population increased by 143 percent, or approximately 17,250 individuals. Similarly, the Hispanic and Latino community has grown by 60 percent, or 3,500. A fourth major population category of individuals who identify by "some other race" has experienced the highest rate of growth, 163 percent, or 7,250 individuals. As of 2010, whites represent less than 50 percent of the total population, compared to over 80 percent in 1980 (Pop Trends 2016). This data underscores the significance of communities of color in Brockton today, and signals the importance of their role in shaping the future of Brockton.

ORIGIN AND LANGUAGE

As of 2013, approximately 25 percent of the city's residents are foreign-born, 7.3 percent of whom are children. The majority of foreign-born residents come from Latin America, (45.6 percent) or Africa (40.5 percent); Europe and Asia represent a total of 13.2 percent (Pop Trends 2016). English is the primary language spoken by 67 percent of Brockton residents. A significant minority speak Portuguese Creole (15 percent) and French Creole (10 percent). Another 8 percent speak Spanish (Pop Trends 2016). For 36.4 percent of Brockton students, English is not their primary language, compared to the state average of 18.5 percent (Pop Trends 2016). Currently 20 percent of Brockton's students are English language learners (Pop Trends 2016). These findings signal that successful efforts at community engagement will need to be multi-lingual in order to engage the many residents of Brockton.



Source: City of Brockton

Four major languages are spoken in Brockton.

EDUCATION

Many of Brockton's residents are students. In fact, 68.4 percent of Brockton's residents ages three through eighteen are enrolled in grades Pre-K through 12, nearly 10 percent higher than the state at 59.6 percent. In 2015 there were 17,431 students enrolled in Brockton public schools (SBPS 2015). An additional 25.9 percent are enrolled in higher education, lower than the state average of 34 percent (Pop Trends 2016). Brockton's large student population is also very diverse. Nearly three-quarters of Brockton's student population is African American, Hispanic, or Latino (Pop Trends 2016). Additionally, 45.9 percent of Brockton students are considered economically disadvantaged. Students in Brockton are, on average, absent from school more often, twice as likely to drop out of high school, score lower in all subject exams administered by the state; and are slightly less likely to attain some college or associate's degree (Pop Trends 2016). We can correlate from the data that Brockton's student population that Brockton's student population tends to struggle with high school and higher education. It may be worth exploring the impacts that introducing urban agriculture into high

school and high educational curriculum may have on student engagement, participation, and success.

ECONOMICS

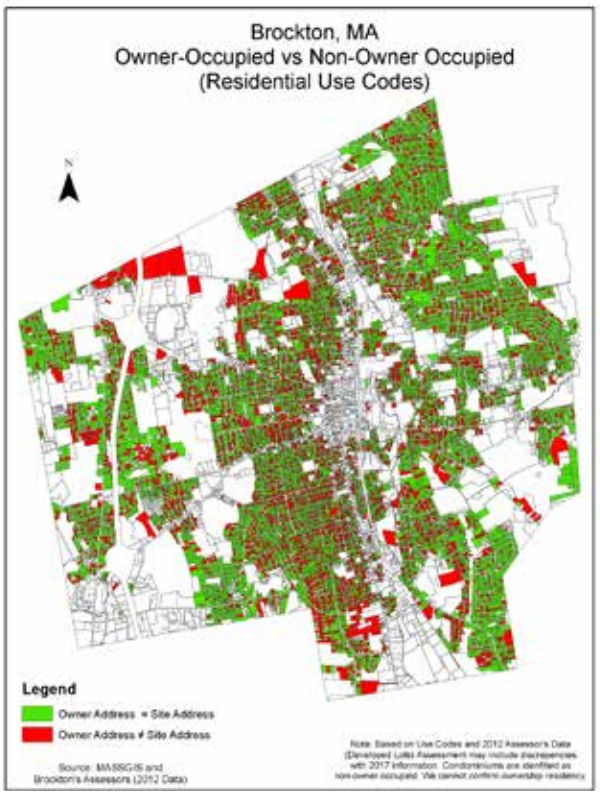
Brockton's industrial decline, coupled with a major demographic shift beginning in 1980, has drastically changed the economic landscape. As of 2013, median family income in Brockton was $48,101, nearly 44 percent lower than the state median of $87,000 (Pop Trends 2016). Consequently, over one-quarter of Brockton families reported incomes below the poverty level, and 41 percent of Brockton households received support from public assistance programs—nearly double the state average. A higher number of minority and single-parent households in Brockton than the state average correlates with lower median household income (Pop Trends 2016). Overall, 51 percent of Brockton youth live in a single-parent household, 10 percent of which live in a female-headed household (Pop Trends 2016).

HOUSEHOLD OCCUPANCY

In 2013, approximately 57.3 percent of Brockton's roughly 35,500 housing units were owner-occupied, the majority of which are single-family homes. In 2013, nearly 10 percent of Brockton's housing units were vacant, slightly below the state average. Vacant units are found most often in the city's urban core, and are more likely to be rental units. Additionally, more than half of rental-unit owners are considered absentee landlords (City of Brockton Planning Department 2017). Nearly 60 percent of Brockton residents spend a third or more (30 percent) of household income on rent, higher than both the state average and that of comparable cities (Pop Trends 2016). A majority of residents spend between $1,000 and $1,500 a month on rent. According to the Department of Housing and Urban Development, families that pay more than 30 percent of their income for housing are "cost burdened" and may face challenges affording necessities including food, clothing, and medical care (Pop Trends 2016). If the majority of Brockton residents are "cost burdened" and almost 50 percent are renting, finding alternative means of land access, like vacant public or park land, for agriculture may be a way that the City of Brockton could support an urban agriculture initiative.

CONCLUSION

Brockton is a young, culturally diverse, community of color: acknowledged as a Gateway City and represented in its educational system. It is also a post-industrial city that is emerging from a series of economic blows that left its real estate market and residents financially insecure. Brockton's emerging identity as a multi-cultural hub demands a new approach to meet the realities of the future.



Source: City of Brockton Planning Department

Owner occupied vs. non-owner occupied properties in Brockton are well integrated with a few outliers of on-owner occupied properties in the Northwest and South-central areas of Brockton.

ENGAGEMENT & OUTREACH

Public engagement was achieved through community meetings and social media. Communication and outreach challenges were encountered including missing representation from minority ethnic communities and community engagement limited to two public meetings.

Previous Brockton city planning project documents in underscored concerns about the difficulty of reaching underrepresented groups in Brockton, particularly the Cape Verdean and Haitian communities. In conversation with an architect who presided over two city-wide planning efforts in 2008 and 2012, he noted the absence of these communities in community meetings. In an effort to include as many voices as possible in a short period of time, and from a distance, social media was used for the duration of the project.

TWO COMMUNITY MEETINGS

Community meetings provided the public with an opportunity to express ideas and comments concerning the project goals and recommendations, and provide additional resources for incorporation. Community meetings also enabled identification of and engagement with community stakeholders, business owners, students, and residents.

The first community meeting took place on February 1, 2017 at Brockton City Hall. Approximately 80 residents, city officials, community leaders, and Brockton students participated. The project goals and process were introduced and definitions of urban agriculture offered. An open forum was conducted where attendees shared their perspectives on urban agriculture, voiced concerns over city ordinances, and participated in a mapping activity to explore areas suitable for agriculture and to identify existing efforts. Continued discussions with several attendees including representatives from Good Samaritan Hospital, Best Bees, Stonehill College, and Brockton High School built on the information gathered at these community meetings.

A second community meeting held on March 1, 2017 provided an opportunity to refine project concepts and goals. About 40 attendees were present at the Shaw's Center. There was a review of the previous month's findings and an analysis of the city's existing urban agricultural efforts, existing environmental, economic, and demographic conditions, availability of potential land parcels for urban agriculture, and review of the project goals and recommendations. Per the request of the community, and in concert with the initial objective of the plan, a discussion explored ordinances and strategies for allowing chickens in the city. This exchange resulted in a revision of the recommendations to include coordinated efforts at advocacy, outreach, education, and community action.

PROFESSIONAL FEEDBACK

Throughout the duration of the project, interviews with sixteen stakeholders and experts helped to frame the plan, provided additional information, engaged parties involved in disputes, and facilitated outreach through parties interested in participating in the plan. These interviews bridged communication gaps in several instances, particularly when a second side of the story was necessary to provide sound recommendations (See Appendix: Interviews).

URBAN FARMING CONFERENCE

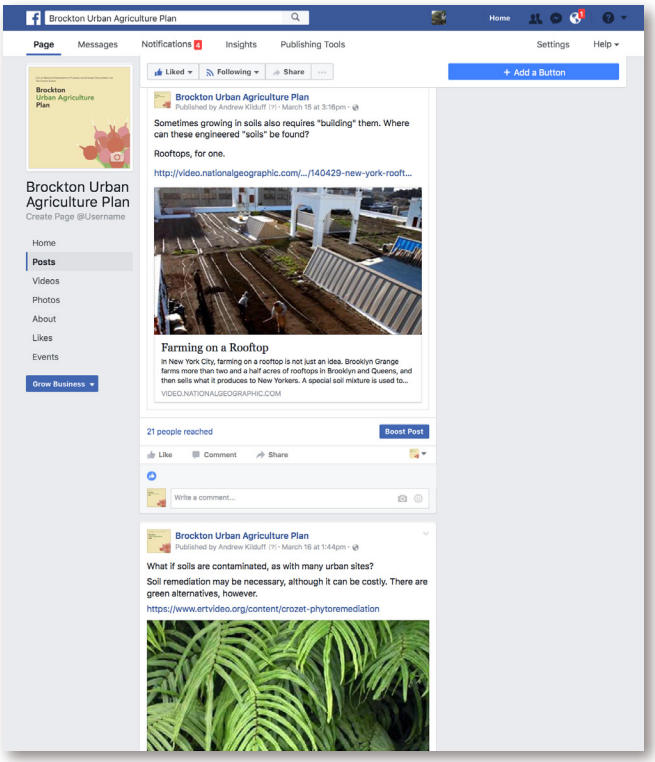
March 4, 2017 marked the fifth Urban Farming Conference hosted by the Urban Farming Institute of Boston. The Conway team and the director of the Brockton Planning Department attended the conference representing Brockton. It was an opportunity to attend informational sessions held throughout the day, and meet with policy professionals from the Massachusetts Department of Agricultural Resources, the Massachusetts Food System Collaborative, community organizers and activists from Brockton and Lowell,and chefs and urban farmers from the food system and urban farming organization Rhode Island Fresh.

Follow-up conversations provided valuable insight for case studies and illuminated efforts to support and promote urban agriculture regionally.

SOCIAL MEDIA

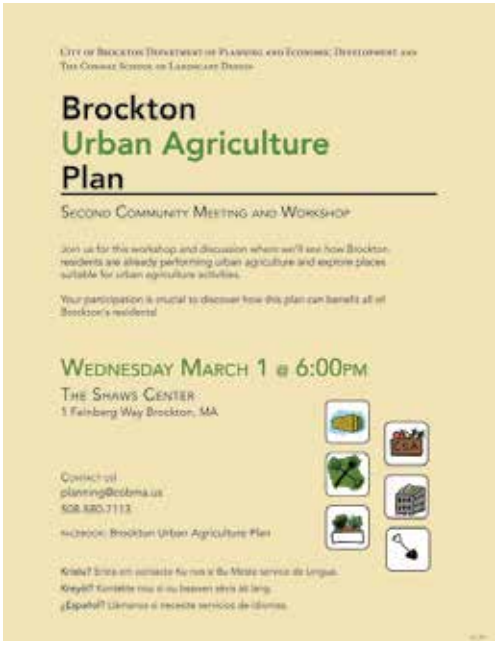
Social media was a critical asset in expanding project outreach. Limited ability to engage community members and stakeholders face-to-face necessitated an online presence. Members of the planning department and the Conway team maintained a Facebook page. This platform enabled the team to engage additional stakeholders, facilitate conversations related to urban agriculture and food systems, respond to community comments and concerns, and provide updates of the project status remotely.

The Facebook page was especially useful for promoting community meetings. Event posts initially reached over 300 individuals per week for the first meeting and over 1,100 per week for the second. Conversations following the second community meeting revealed these promotions reached far beyond the Brockton community and were shared statewide. Flyers in four languages were posted to engage the four predominant language communities in Brockton: English, Portuguese, Haitian Creole, and Spanish.


Brockton Urban Agriculture Plan
Page
Messages
Notifications
Insights
Publishing Tools
Settings
Help
Liked
Following
Share
+ Add a Button
Brockton Urban Agriculture Plan
Create Page @Username
Home
Posts
Videos
Photos
About
Likes
Events
Grow Business
Brockton Urban Agriculture Plan
Published by Andrew Kilduff · March 15 at 3:16pm
Sometimes growing in soils also requires "building" them. Where can these engineered "soils" be found?
Rooftops, for one.
http://video.nationalgeographic.com/.../140429-new-york-rooft...
Farming on a Rooftop
In New York City, farming on a rooftop is not just an idea. Brooklyn Grange farms more than two and a half acres of rooftops in Brooklyn and Queens, and then sells what it produces to New Yorkers. A special soil mixture is used to...
VIDEO.NATIONALGEOGRAPHIC.COM
21 people reached
Boost Post
Like
Comment
Share
Write a comment...
Brockton Urban Agriculture Plan
Published by Andrew Kilduff · March 16 at 1:44pm
What if soils are contaminated, as with many urban sites?
Soil remediation may be necessary, although it can be costly. There are green alternatives, however.
https://www.ertvideo.org/content/crozet-phytoremediation
The Brockton Urban Agriculture Plan Facebook page.

CONCLUSIONS

It will be advantageous to actively pursue input from those communities and voices not yet represented in this plan. This may require holding meetings and engaging in outreach at times most convenient for single-parent families, in coordination with other cultural events, and in places where the communities already regularly meet and make decisions, including schools like Brockton High School and faith-based centers. There are also a number of innovative strategies for community outreach enabled by emerging technologies that provide another approach. Continued community engagement in this process will be critical.



To expand outreach, posters for the second community meeting were printed in four languages: English, Haitian Creole, Spanish, and Portuguese.

DEFINING URBAN AGRICULTURE

URBAN AGRICULTURE

A LONG, RICH HISTORY

Urban agriculture can be defined as the growing of plants and the raising of animals within and around cities. Urban agriculture has been practiced since 3,500 BCE in Mesopotamia, 2,400 BC in Sumer, and 1500 BC in the Americas by the Aztec *chinampas* or the Maya and Incas (Mougeot 1993). As long as there have been cities, there has been agriculture in cities and around cities. Historically, populations were limited by the lack of sophisticated refrigeration and transportation technologies that currently support our industrial and global agriculture and food system (Schaudt 2012). Most ancient urban development proliferated in rich soils of river valleys and coastal deltas where crop production was highest as exemplified by the Tigris and Euphrates River valleys in the Middle East or the Nile River valley in Egypt. As urban populations grew, models like the Roman latifundias (larger peri-urban and rural estates) and European manorial systems gained prominence (Neill 2017). Today, an estimated 800 million people, or 11 percent of the global population, are growing food in urban areas (Smit 1996). So, the question is not if agriculture is suitable in urban settings, but how could it fit in a city like Brockton, and what are the associated benefits?

URBAN AGRICULTURE IN THE U.S.

There is a rich history of repurposing brownfields and cultivating fruits and vegetables in American cities. In the 1890s, social reformers began the process of turning vacant lots into bountiful food-producing lots (Lawson). In the 1930s and 1940s, the Victory Garden movement was producing 9 to 10 million pounds of fruit and vegetables on 20 million garden plots (Bassett 1981). It was not until the post-World War II era, coinciding with the rise of the "Green Revolution," that U.S. suburban and urban populations rose dramatically and the practice of urban agriculture declined. There was another wave of interest during the New Ecology movement of the 1970s, which came against considerable United States Department of Agriculture (USDA) resistance, funded and supported by industrial agri-business (Brown 2000). This industrial agriculture system "consumes fossil fuel, water, and topsoil at unsustainable rates...and contributes to numerous forms of environmental degradation." (Horrigan et al. 2002). There are numerous proven social, economic, and environmental benefits of urban agriculture, exemplified in the words of Massachusetts Rep. James Burke in 1972 that "the average gardener could produce $240 worth of food for no more than an outlay of $9" (Heimlich 1992). Congress heard the call and between the late 1970s and 1990s spent millions supporting urban gardening efforts (Brown 2000). In the 1980s, HUD even funded a successful urban homesteading experiment on 129 properties in eleven cities across the country (HUD 1987).

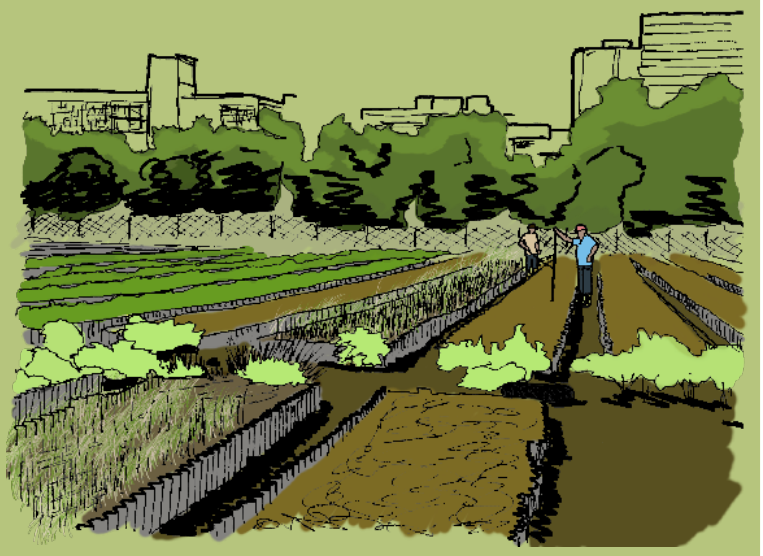
URBAN AGRICULTURE TODAY

Today, there are unprecedented challenges to urban populations, including the impacts of climate change and environmental degradation, population density and sprawl, inequitable distribution of resources, and associated health problems. In 2010, 80.7 percent of the U.S. population lived in urbanized areas with an average density over 46 times greater than rural areas (Census 2010). It takes approximately one acre to meet the nutritional needs of one person (New England Food Vision), indicating that self-sufficiency in an urban context is likely an unattainable goal. Much of this urban population growth is a result of the migration of poorer populations from rural areas (WHO 2010). Brockton is experiencing this trend with a growing immigrant population that is now more than 50 percent of the city's population (Pop Trends 2016). There are many benefits to practicing urban agriculture including contributing to a healthier, more equitable food system as exemplified by the way Cuba dealt with extreme economic, environmental, and resource scarcity beginning in the early 1990s.

CUBA: A TALE OF CITY FARMING

"Following the collapse of the Soviet Union in the early 1990s, Cuba found itself abruptly cut off from the imports and trade subsidies that had sustained it for decades. Confronted with the impossible task of feeding a nation without fuel, fertilizers, and pesticides, the government responded by restoring local foodsheds. Driven by hunger and supported by the state, Cubans began growing their own organic produce anywhere they could find space—on rooftops, balconies, vacant lots, and even school playgrounds."

Carey Clouse, *Farming Cuba*



A *parcela*, or large garden in a vacant lot, in Havana, Cuba.

Since 1966—when urban planners developed the peri-urban farms called the Havana Belt surrounding the city—residents of Havana have volunteered at these farms, learning how to cultivate seedlings, and sow and harvest crops (Clouse 38). The Cuban government played a critical role in raising public awareness, subsidizing agricultural efforts, and supplying resources like tools and seeds to farmers (Clouse 41).

The government passed a series of Agrarian Reform Laws that "allowed for the transfer of seventy percent of Cuba's agricultural land—through usufruct rights—to individuals and to peasant associations and cooperatives for farming" (Clouse 41). Usufruct rights give individuals access to use government land, including public parks, vacant lots, median strips, and other unproductive areas, for urban farming (Clouse 55). By 1998, there were urban community gardens, markets, institutional gardens, and greenhouses amounting to 8,000 gardens covering 30 percent of Havana (Clouse 43).

LESSONS FOR BROCKTON

Although existing conditions in Brockton are wildly different from those of 1990s Cuba, there are some valuable lessons to be learned from the experiences of Havana's many urban gardeners and farmers.

First, larger, more traditional peri-urban farms can serve as valuable agriculture training grounds for city residents. By preserving existing larger contiguous farms like Gerry's farm and forming alliances with the Farm at Stonehill and Langwater Farm, Brockton residents can develop the practical skills needed to produce food in the city.

Second, government can provide access to vacant lots and other city-owned land through usufruct rights. In Brockton, where many residents are renters without land of their own or live in multi-family dwellings, it could be helpful for the City to grant access to vacant and unmaintained lots.

Third, vacant lots, road median strips, public parks, and other unproductive areas can be used for agriculture. If the City could provide access to these unconventional places, it is possible that some farmers and gardeners could produce a living or offset home food expenses.

A COMPONENT OF THE FOOD SYSTEM

DEFINING URBAN AGRICULTURE

Urban agriculture is typically understood as the growing of food in urban spaces including those places that are seemingly incompatible with traditional agriculture like building interiors (leafy greens grown in trays stacked like bookshelves) or balconies (fruit trees in pots). These innovations enable urban populations to access local, healthy foods, decrease household food expenses, and decrease reliance on unhealthy industrial practices.

A sustainable community food system, as defined by the University of California Sustainable Agriculture Research and Education Program (UC SAREP), is a collaborative network that integrates sustainable food production, processing, distribution, consumption, and waste management in order to enhance the environmental, economic, and social health of a particular place. Key features include:

- A stable base of farms that use sustainable production practices emphasizing local inputs;
- Marketing and processing practices that create more direct links between farmers and consumers;
- Improved access for all community members to an adequate, affordable, nutritious diet;
- Food and agriculture-related businesses that create jobs and recirculate financial capital within the community; and
- Improved living and working conditions for farm and food system labor.

To help understand how to integrate urban agriculture into an urban food system, it can be helpful to understand how food systems work at other scales.

FOOD SYSTEMS AT WORK

Food systems today operate globally, nationally, regionally, and locally. Global food systems enable us to eat palm hearts from southeast Asia, coffee from Yemen, and avocados from Mexico. Indicators of the national food system include familiar slogans like Florida orange juice, Idaho potatoes, Central Valley fruit and nuts, and Texas long-grain rice. However, there are indications that harm can come from relying too heavily on a globalized food system including those brought to light by many archeologists who attribute the decline of ancient urban civilizations to a lack of food (Brown 2000).

> Justus Liebig…took a close interest in the history of urban food production and studied the environmental history of ancient Rome. For two centuries, much of Rome's grain supply was imported from North Africa, with a dramatic impact on the area's soil fertility. The minerals contained in the grain – nitrogen, potash, phosphate, magnesium and calcium – were removed from the farmland and, via Rome's Cloaca Maxima, flushed into the Mediterranean, never to be returned to the land of North Africa. Despite having studied Rome's mistakes, most modern cities have repeated this pattern.
>
> (Deelstra 2000)

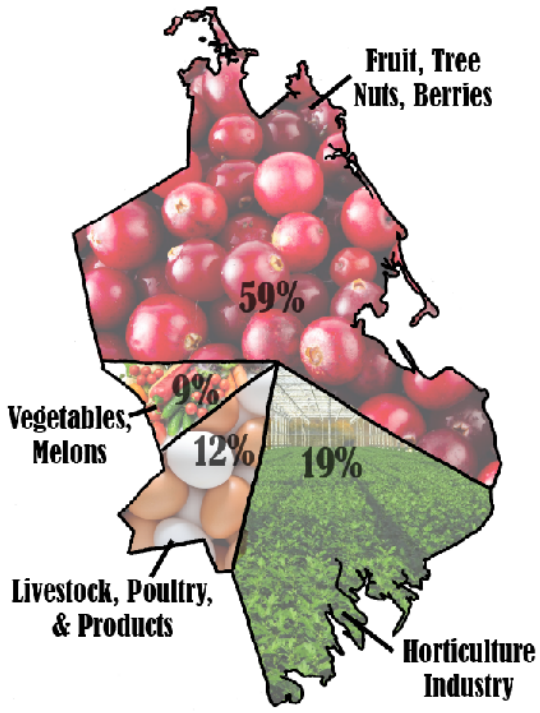
The resurgence of local, urban food production does not need to be a replacement of global food systems, but part of a reformation of unsustainable agricultural practices. The global food systems are dependent on the use of fossil fuels for all areas from production to processing and distribution with little to no regard for waste reclamation or healthy nutrient cycling (Horrigan 2002). It is common in the local food movement to vilify the global food system and revere the local, however, a more balanced approach to food systems intervention is necessary to achieve success (Born 2006). Intervening at the scale of a local food system can be one solution in remedying many of the issues faced by imbalanced global food systems and creating more sustainable food systems (SustainableTable.org).

Source: Sustainable Cities Institute

The food system comprises six distinct components: production, processing, distribution, access, consumption, and waste recovery. This model is applicable to scale, whether global, regional, or local. Urban agriculture may include or intersect at each component.

DEFINING THE FOODSHED

There are many ways of understanding a regional or local food system. One helpful term is "foodshed", the geographic region that produces the food for a particular population. The term is used to describe a region of food flows, from the area where food is produced, to the place where it is consumed, including the land it grows on, the route it travels, the markets it passes through, and the tables it ends up on. According to the *New England Food Vision*, "It takes an estimated 16 million acres to feed New England's 14.5 million people. In other words, over 1 acre per person is needed to grow all the food the region consumes" and currently only 12 percent of the food consumed in New England is produced there (NEFV). In southeastern Massachusetts, greater than 50 percent of all agricultural products are cranberries that are exported (SEMAP). Although there are many efforts in place to shift this trend, there is still much work to be done. Coordinated efforts within food system networks of producers, distributors, and consumers are required to shift these trends.



Only 21% of agriculture in Plymouth county produces vegetables or livestock products; over 59% produces cranberries.

URBAN AGRICULTURE BENEFITS

LOCAL BENEFITS

Urban agriculture has the potential to improve quality of life for those direct contributors to the local food network and the community-at-large. Although Brockton residents initially expressed the simple desire to have a space to grow and raise food, there are many benefits that could also be derived from meeting the needs and goals of residents, local businesses, community, and city officials. These include:

Economic benefits
- Local economic stimulus
- Employment growth
- Affordable food
- Increased property values

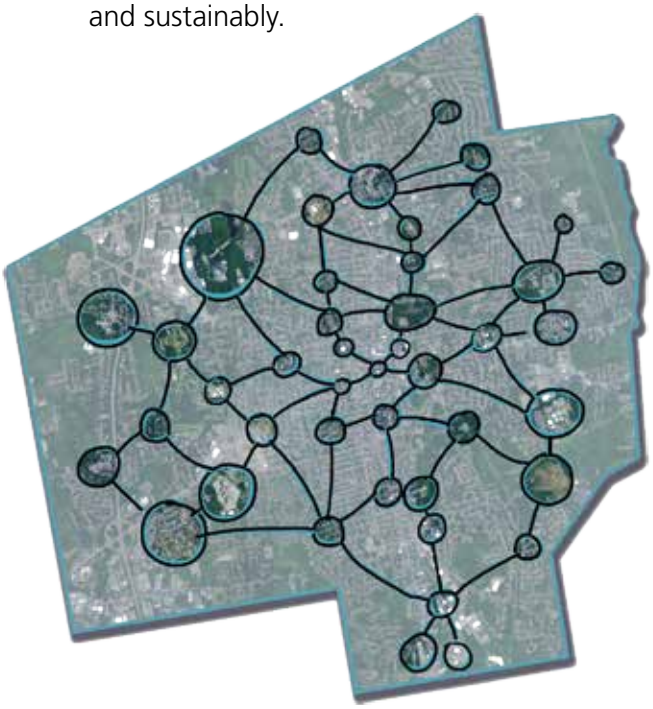
Social benefits
- Community empowerment
- Awareness of food systems
- Youth development and education
- Food security
- Safe spaces
- Beautiful spaces
- Engagement and interaction
- Access to healthy food
- Food-health literacy
- Healthy eating
- Physical activity

Ecological benefits
- Environmental Stewardship
- Conservation
- Stormwater management
- Soil improvement
- Biodiversity and habitat

The common thread uniting these benefits is an improved **quality of life**. This is the vision echoed by the community of Brockton. Participants in community meetings wanted access to land for agricultural uses. It was equally important to the community to integrate and relate agriculture practices with education and job training and for it to be a part of conserving, protecting, and restoring the environmental assets of Brockton. The community also desired an increased sense of community and fostering of connections between existing agricultural and food system efforts. There are examples of other communities deriving similar benefits from urban agriculture, as seen in two examples on the following page.

BENEFITS TO THE FOOD SYSTEM

Urban agriculture has the potential to facilitate the development of a sustainable food network contributed to by members of the food system including the producers, processors, distributors, consumers, and advocacy organizations. By first understanding the food network and identifying the current key participants in Brockton, it will then be possible to improve upon it meaningfully and sustainably.



Local actors in Brockton play an important role defining a local food system, forming a potential web of processors, distributors, and consumers.

BALTIMORE, MD

RECLAIMING LOTS IN BALTIMORE

Baltimore suffered a severe loss of industry and disappearance of 100,000 jobs between 1950 and 1995 (SEIU 2004). This loss corresponded with migration that came to be known as "white flight" and precipitated the influx of African-Americans, whose population more than doubled between the years of 1950 and 1970 (SEIU 2004). What resulted from these shifts in industry and demographics was a landscape with over 14,000 vacant lots, 16,000 vacant buildings, and populations living in food deserts (Baltimore Office of Sustainability).

After demolishing whole blocks, the City began a sustainability and regreening initiative to invigorate these impoverished communities (Baltimore Office of Sustainability). Beginning with the Baltimore Housing Associations Power In Dirt and Adopt-A-Lot Programs, the City developed an online database of all vacant city-owned parcels. Residents could contact program administrators with a request to start a garden on a vacant lot in their neighborhood (Adopt-A-Lot).

Those programs are now supported by the Baltimore Office of Sustainability's Growing Green Initiative guided by the Green Pattern Book (GGI). Their mission (abbreviated here) is to:

- Stabilize distressed neighborhoods by greening, maintaining, and transforming vacant lots from liabilities into assets.
- Strengthen the social fabric of neighborhoods by helping communities and nonprofits adopt and green vacant land.
- Attract new development by reusing vacant land for permanent, public benefit such as strategically placed open space.
- Create jobs and job training opportunities and increase access to locally grown, healthy foods in Baltimore's food deserts by creating new farms on vacant land (Baltimore Office of Sustainability.

FRANKLIN CO, MA

Photo source: Franklin County CDC

The Franklin County Community Development Corporation serve entrepreneurs, including Pioneer Valley Frozen Vegetables.

A COMMUNITY BUSINESS HUB

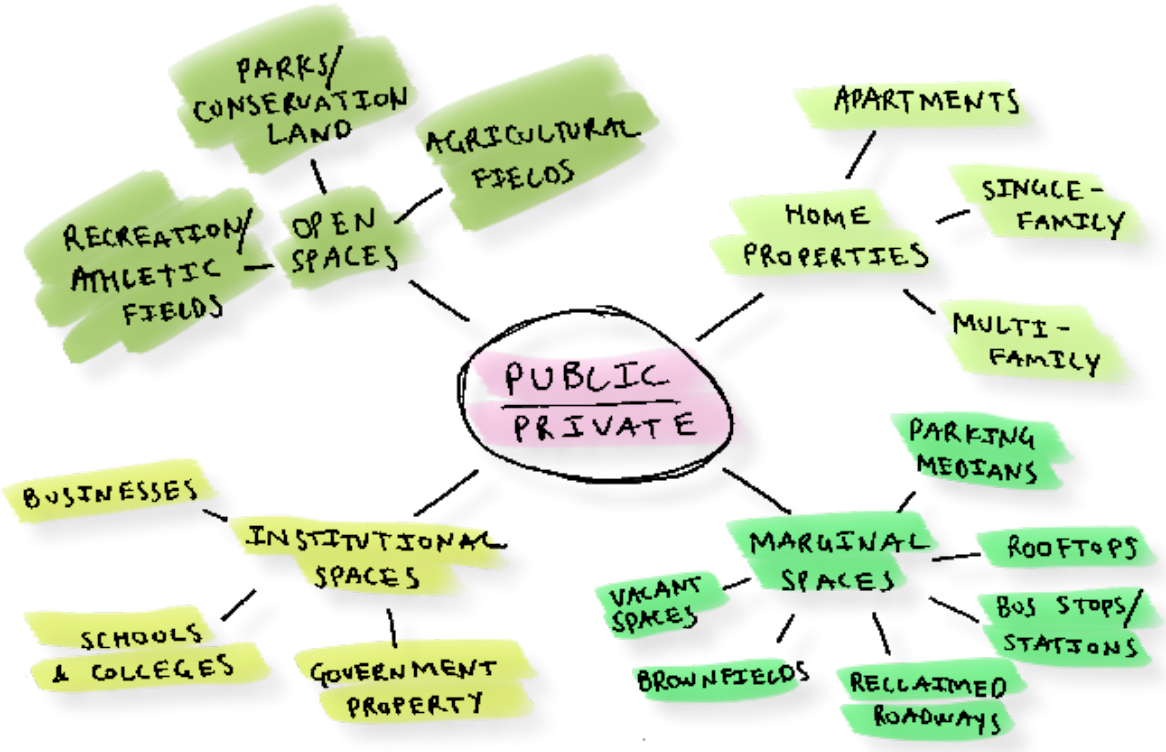
The Franklin County Community Development Corporation (CDC) was established in 1979 to serve entrepreneurs of Franklin County who are exploring new business ideas, and current businesses looking to grow (FCCDC Community Investment Plan 3). The CDC has expanded to serve four Worcester County towns, fifteen Berkshire County towns, and sixteen Hampshire County towns, in addition to twenty-six towns in Franklin County, and serves over 300 clients annually. Its model provides clients with:

- Capital: Flexible business loans and industrial/ office space for business incubation through loans. The CDC has successfully leveraged $36 million in loans from lenders over the course of its existence (FCCDC CIP 1)
- Counsel: Educational workshops, and business and strategic planning courses.
- Connections: Referrals for collaboration and access to resources of the Western MA Food Processing Center, and working with organizations such as Center for New Americans to engage immigrant communities (FCCDC CIP 4).

(Adapted from FCCDC.ORG)

FORMS AND LOCATIONS

Urban agriculture can take many forms and occupy a variety of spaces and places. They can represent the classic farm with crops growing in clean rows, like the window box in a neighbor's balcony, or stacked trays in an old brick warehouse downtown. The appropriate method or system of cultivation is determined by the qualities of the property and desires and means of the farmers or gardeners. Some of the potential spaces that might be suitable for production include:



MILWAUKEE, WI

Photo source: OWN

GROWING POWER

Growing Power was founded in 1993 by Will Allen, a retired pro basketball player, as a place for teens to develop professional skills, learn to grow food, and experiment with innovative urban agricultural production methods. In the past twenty-four years, Growing Power has grown from its two-acre lot, just six blocks from the largest public housing project in Milwaukee (Capretto), to operating over 300 acres in two cities with around fifty employees and many others who have gone on to start their own businesses (GP Website).

Using generous grants from the Ford Foundation, The Kellogg Foundation, and the MacArthur Foundation, and a combination of business savvy and charisma, Mr. Allen has developed a successful model that can produce crops year-round in the inhospitable winters of Wisconsin and Illinois (Royte).

Terming the project an "idea-factory," Allen has created the youth corps program, a farmer training program, and a cooperative food-hub that collects food from farmers all over the area to sell to larger markets and institutions. Growing Power is also pioneering farming methods like vermicomposting, vertical farming, and aquaculture.

HOOD RIVER, OR

Photo source: buildingdata.energy.gov

HOOD RIVER MIDDLE SCHOOL

"The Outdoor Classroom Project is a work in progress where students are the researchers, engineers, designers, architects, builders, and users of a multidisciplinary, multi-sensory learning experience." - Michael Becker, Teacher

Michael Becker wanted to teach middle school curriculum differently. He gathered his students outside to begin a garden in an unused piece of the school property. Before long, this garden became a place for students to learn science, math, reading, and social studies. The students did their own research to develop business proposals to begin selling their produce at the local farmers' market and to create value-added product businesses. Many of these student-created businesses continued to be successful as the students went on to high school and led to innovative mentor programs between past and current students.

When it came time for a new science and music building, the students were the ones responsible for many aspects the design. This included grant-writing, design of the rainwater catchment systems, placement of solar panels, and layout of the new gardens. This developed into the Outdoor Classroom project that then took students out into the field conducting research for local universities like seasonal snowpack measurements on Mt. Hood.

PRODUCTION FORMS AND LOCATIONS

Production systems can be categorized by: **outdoors**, **indoors**, or **in-between** the two. In urban areas there can be an abundance of vacant buildings or other opportunities to convert these spaces into growing facilities.

The ten major types of production systems in urban agriculture are:

OUTDOOR

Row crops are fruits or vegetables cultivated in beds or rows for ease of harvest and successional planting.

Raised beds are production beds in boxes of different sizes and material that can vary from a few inches to a few feet in depth. Especially useful in areas with contaminated or non-ideal soils.

Polycultures can be a combination of the above or integrated within an orchard setting where multiple species of food-producing plants are grown together for mutual benefit.

Livestock/beekeeping are methods for egg, meat, milk, and honey production or for the provision of services like pollination, fertilization, or pest control.

INDOOR

Hydroponics are a method for growing leafy greens with roots submerged in either a growing medium or directly in water and nutrients.

Aeroponics are the cultivation of leafy greens with roots that are fed by a soluble nutrient and water mist.

Aquaponics are the cultivation of both greens and fish in a system where fish provide nutrients for plants and plants filter the water for the fish.

Vertical farming can integrate any of the above indoor methods into a vertical structure usually with the assistance of growing lamps that can create year-round production in indoor settings.

IN-BETWEEN

Balcony/rooftop gardening includes any number of food production methods in pots, windowboxes, raised beds, and crates in small or marginal spaces.

Greenhouses are season-extenders typically made of glass or a plastic material that enable early seed-starting and extended production of vegetables in colder climates.

Freight farming is the reuse of portable shipping containers for food production, typically employing vertical farming methods.

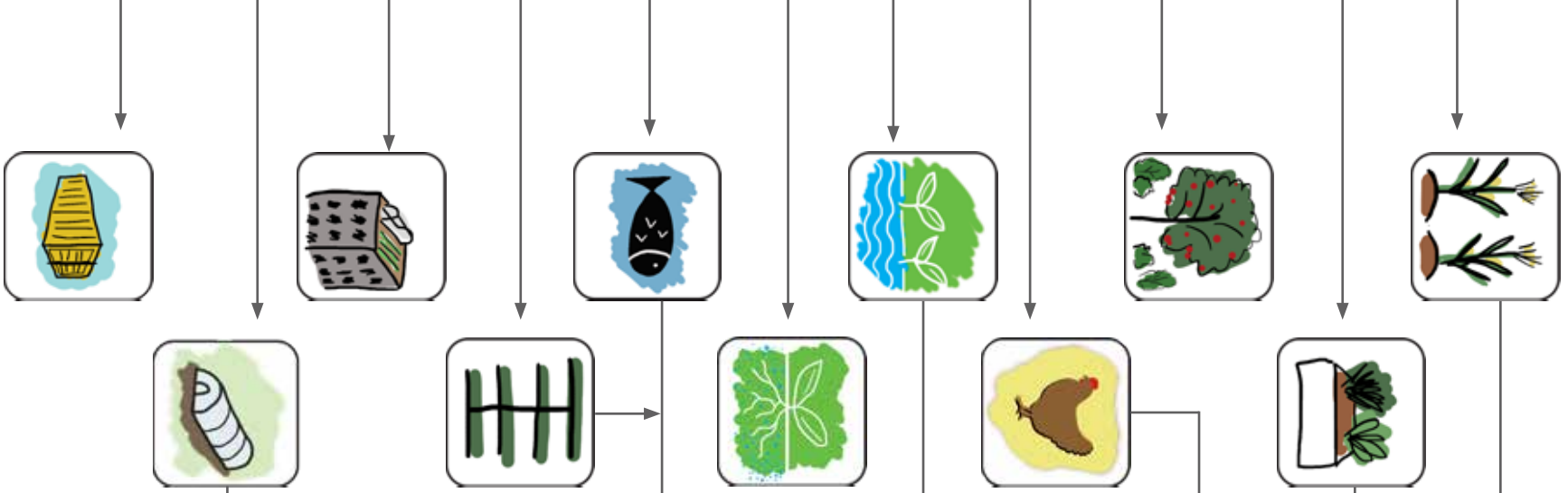


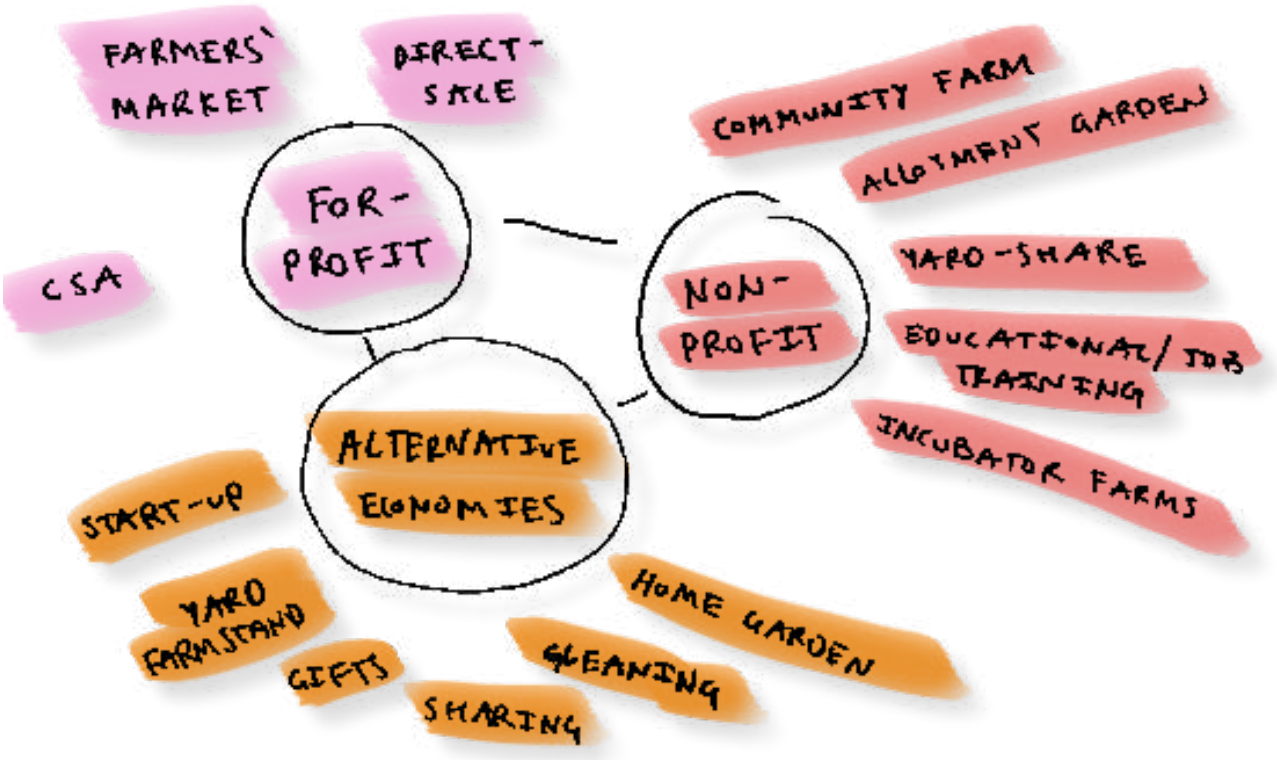
Photo source: Andrew Kilduff

Photo source: Brian Barnes

Photo source: Karen Jackson

ECONOMIC MODELS

There are three primary economic models of urban agriculture enterprises, including for-profit, non-profit, and informal/alternative. The farmers' market, the community-supported-agriculture (CSA) share, or the farm-to-table restaurant are examples of a direct-sale, for-profit market model. However, urban agricultural operations do not have to be for-profit. There are numerous successful examples of non-profit projects or those led by the community for social and health benefits. Some of these potential models that might be suitable for urban agriculture include:



BOSTON, MA

Photo source: highergroundrooftopfarm.com

Tomatoes are grown on a roof at Higher Ground Farm

HIGHER GROUND FARM (FOR-PROFIT)

In 2013, two friends with experience in food system work joined forces with ReCover Green Roofs, a Kickstarter campaign, the City of Boston, and others to start Higher Ground Farm on a rooftop in the Southie neighborhood of Boston. They grow greens, tomatoes, herbs, and other vegetables on a 55,000-square-foot roof and sell them directly to restaurants and through an on-site farmstand.

In their second year of business they sold over a ton of produce to fourteen local businesses all delivered by bicycle. They started growing their produce in 1,400 milk crates and have used novel marketing strategies like a "Got Milk Crates?" campaign that provided them an additional 450 milk crates.

Four years into the innovative business, they are providing local, organic food for more than fourteen restaurants, food donations to The Lovin' Spoonfuls Food Rescue (who collects food that would be wasted and distributes it), and the community at large through their Boston Design Center farmstand. They also teach the community about the benefits and impacts of local food and green roofs by creating jobs, accepting volunteers, and offering tours.

CLEVELAND, OH

Source: ohiocityfarm.wordpress.com

Ohio City Farm map

OHIO CITY FARMS (NONPROFIT)

Between 1996 and 1998, low-rise buildings on Riverview terraces in Cleveland were demolished to make way for a new mixed-income development. Ten years later, neighborhood members, in collaboration with the City of Cleveland and Ohio City Inc., and with support from non-profit and for-profit enterprises, developed a six-acre urban farm, one of the largest in the United States.

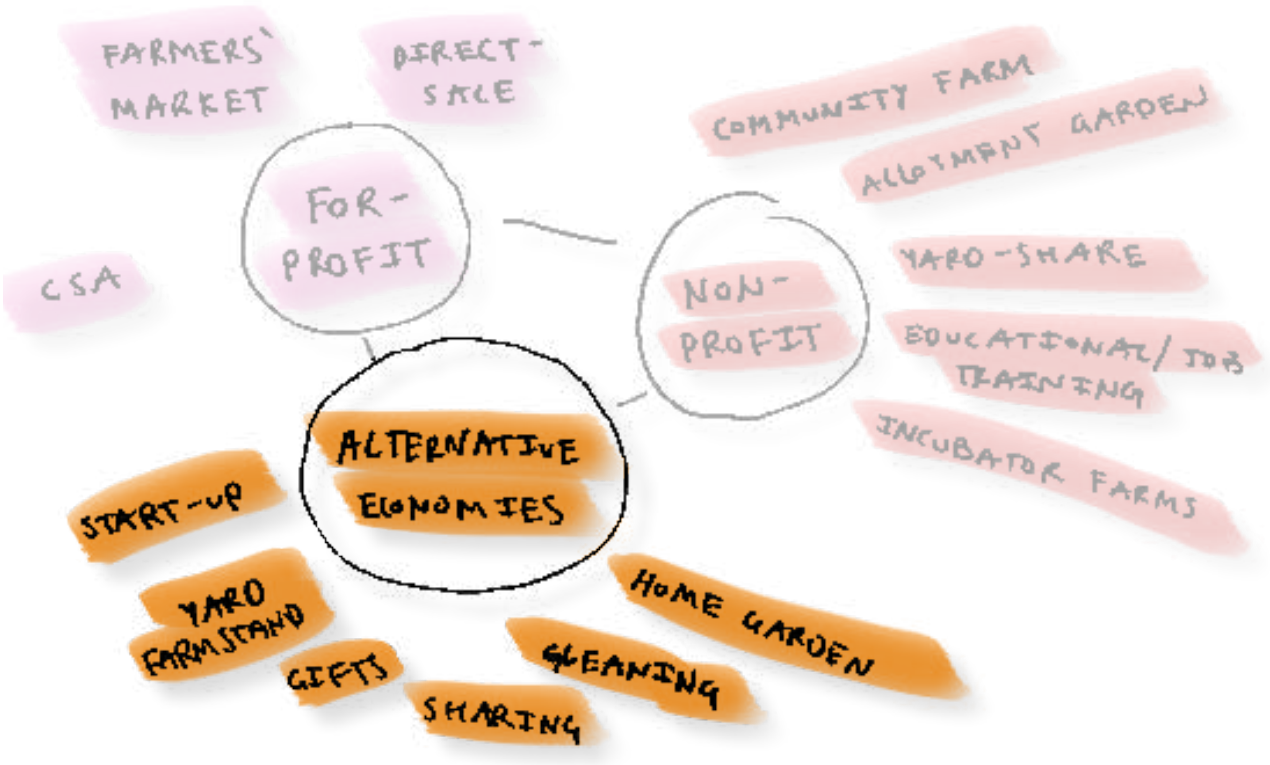
It was designed for the incubation of entrepreneurial farm businesses and workforce development through low-cost land, shared facilities, and technical assistance.

Today five organizations operating on-site manage a farmstand, sell to local restaurants, have a 47-member CSA, have a kitchen incubator and have been lauded as a national model for urban agriculture by the USDA.

Notable collaborations include the first micro-brewery in Ohio, Great Lakes Brewery, locating in the development and operating a farm project on-site, and Refugee Response, an organization that empowers refugees to become contributing members to their communities through agriculture and agriculture-related enterprises.

INFORMAL/ALTERNATIVE MODELS

Informal and alternative economic models are intriguingly complex, often misunderstood, and potentially very significant. The informal economy is the diversified set of economic activities, enterprises, jobs, and workers that are not regulated or protected by the state. The concept originally applied to self-employment in small unregistered enterprises. It has been expanded to include wage employment in unprotected jobs (for example, seasonal farm laborers, non-unionized positions, and temporary employment) (WIEGO Website). This may include farmers or gardeners who may market or sell without a business license or via an other formal structure during the start-up phase, the farm workers paid under the table, and non-permitted food vendors for example. These illegal activities can be regulated to improve working conditions, job security, and fair working wages. Examples of this include issuing permits for food vendors in the city and by promoting urban agriculture, creating low-barrier points of entry for entrepreneurs and existing businesses, as found in the Franklin County Community Development Corporation. The alternative or diverse economies include the eggs you gift your neighbor, the food donated to local food banks by Brockton High School gardeners, the gleaning of food that went unharvested by the farmer, and the expense offset that results from growing food at home or in a community garden.



LOS ANGELES, CA

Photo source: civileats.com

Ron Finley.

GUERILLA GARDENING

Ron Finley decided to address the issue of food security and food access in the parking strip in front of his house in South Los Angeles. He planted a garden, providing himself and neighbors with fresh food and using it as a teaching garden to involve neighbors in growing their own food (Charles 2017). In doing so, Ron engaged in guerilla gardening, the act of gardening without legal right in a public space. It encompasses a diverse range of people and motivations, and is employed by city residents from San Francisco to Los Angeles to London. This practice aims to promote re-consideration of land ownership in order to assign a new purpose or reclaim land that is perceived to be in neglect or misused. (Please note that the City of Brockton does not advocate trespassing on private property.)

SAN FRANCISCO, CA

Photo source: rebargroup.org

Annual Park(ing) day in San Fransisco.

TACTICAL URBANISM

Tactical urbanism has been popularized by groups like Rebar based out of San Francisco. Rebar defines tactical urbanism as the use of modest or temporary revisions to urban space to seed structural environmental change (*Parking Day RSS*). The Park(ing) Day event that began with a single act by Rebar in 2005 grew to 975 parks in 162 cities in 35 countries on 6 continents (Courage 2017). One common action is setting up a temporary park installation in paid parking spaces, encouraging residents to rediscover familiar or underused parts of their city.

EXISTING CONDITIONS

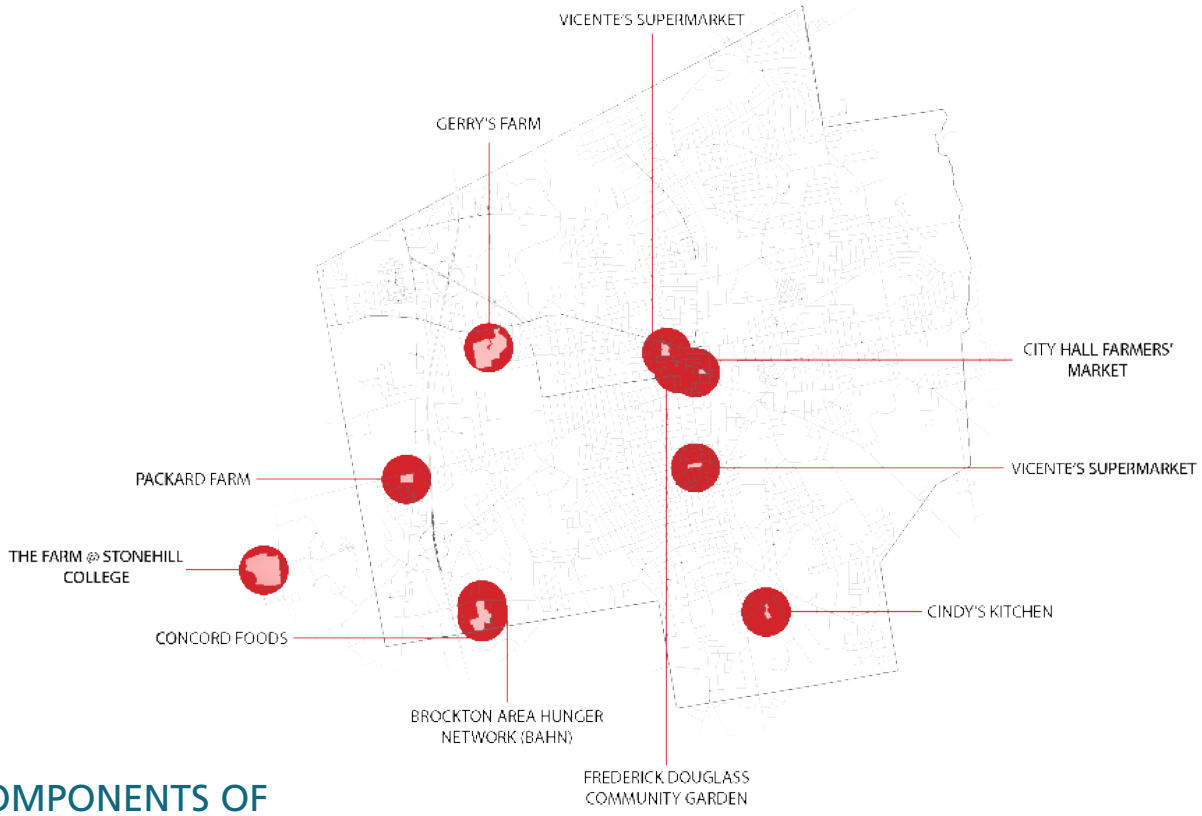
FOOD SYSTEM CONTEXT

To better understand how Brockton residents might meet their goals for developing an urban agriculture system, the team conducted a series of spatial analyses to:

- Identify the location of key food system elements
- Identify key stakeholders and organizations participating in these efforts
- Identify patterns of limitations and constraints
- Determine suitability of land for agriculture
- Prioritize parcels appropriate for agriculture

EXISTING FOOD SYSTEM COMPONENTS

Food system elements, including agriculture, exist in many forms in Brockton, but these efforts are mostly small and dispersed. During community meetings, questions were posed to the community about the current state of the food system and agriculture in Brockton. From their responses, it was clear that there are diverse efforts to stimulate agricultural efforts in Brockton and there are gaps, including few productive farms, a lack of entrepreneurial food processing and distribution, an unclear understanding if restaurants and grocery stores are purchasing locally grown food, few options for farmers to sell produce outside of the farmers' market, and no established service for collecting and composting organic waste. This section identifies components of the food system where food processing, distribution, restaurants, and markets exist; Further analysis is needed to build a city-wide inventory of all food system components.



COMPONENTS OF BROCKTON'S FOOD SYSTEM

FOOD SYSTEM COMPONENTS: GROWERS

Gerry's Farm, located in the northwest part of Brockton (Pleasant Street.), is the last remaining commercial agriculture operation. Approximately 35 acres are in production in addition to greenhouses. All produce and farm products are sold directly to customers through the farm stand on-site.

Packard Farm, located in the western part of Brockton, is a greenhouse production facility producing ornamental and edible plants for retail.

The Farm at Stonehill, a 1.5-acre student-managed vegetable farm founded in 2011, operates out of Easton, MA but serves the Brockton community through its mobile market van and at the Farmers' Market at City Hall. It provides education in agricultural operations for Stonehill College students and farm volunteers, and provides fresh food for the community of Brockton and area food banks and kitchens.

FOOD SYSTEM COMPONENTS: MARKETS

Family-owned **Vicente's Supermarket** has two locations that serve the community. Its Pleasant Street location is attached to a Brockton Neighborhood Health Center, making access to healthy, affordable food easy for those who are mobility impaired.

A **Farmers' Market** is held at City Hall Plaza every Friday from 10:00 am to 2:00 pm from July through October. There is another seasonal market at the Brockton Fairgrounds and a third market proposed for the Brockton Neighborhood Health Center. Currently, attendance is low, an issue for both farmers and the city which hosts the market. Conversations are taking place about a possible new location and more convenient time.

FOOD SYSTEM COMPONENTS: PROCESSORS

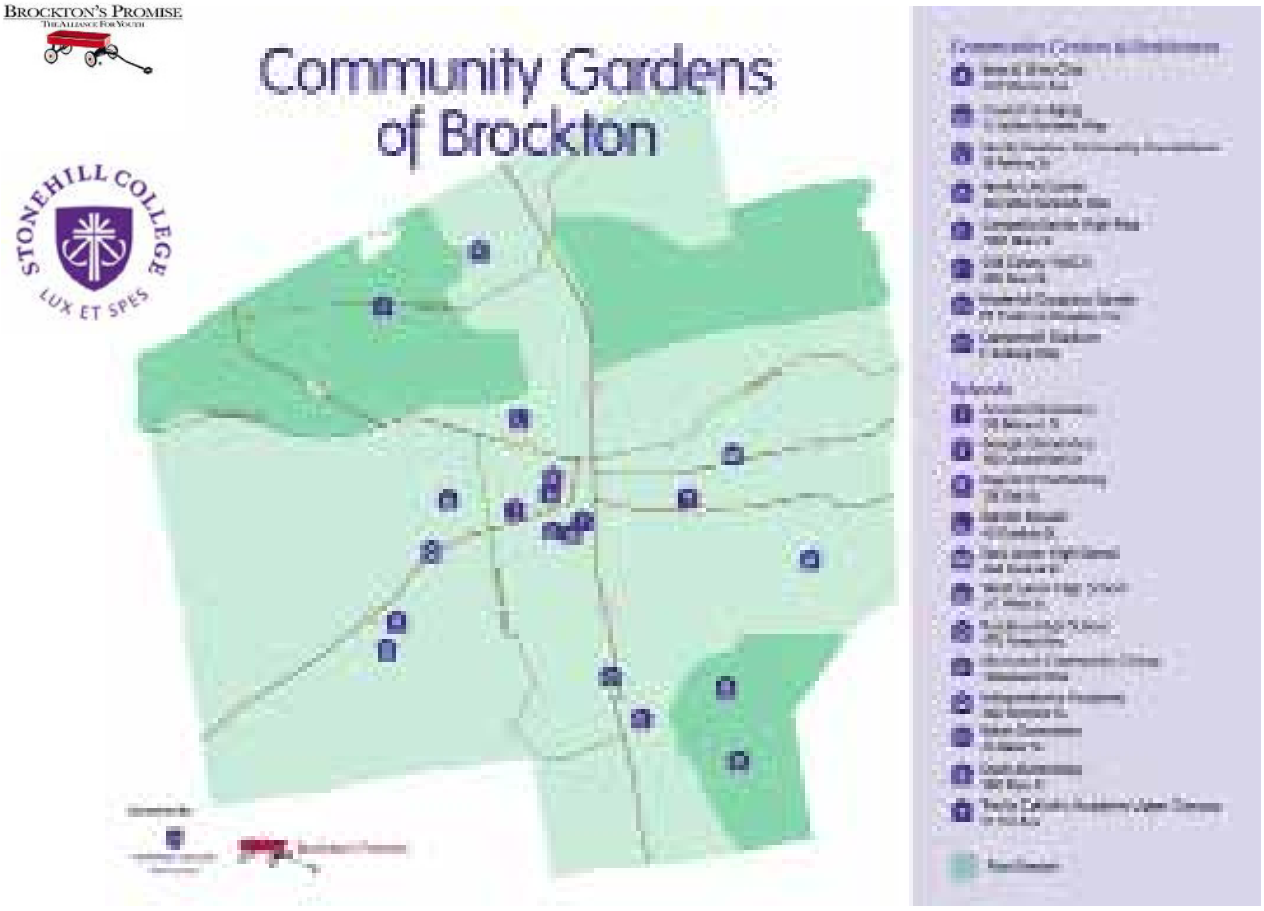
In Brockton there is an industrial food processing sector and businesses, including **Cindy's Kitchen** and **Concord Foods**. These firms demonstrate how Brockton already contributes to a regional and national food system. Their success could encourage local or regional agriculture-related businesses to open facilities in Brockton. The presence of these operations suggest there is potential for exploring smaller-scale food processing and distribution enterprise, for example start-up food delivery services, commissary and community kitchens.

OTHER FOOD SYSTEM EFFORTS

In recent community meetings, dozens of Brockton residents reported that they garden and raise chickens at home. Residents added they garden in front, back, and side yards of their properties; these gardens include raised and straw-bale garden beds, and in some cases a chicken coop for laying hens.

Homeless shelters and food pantries are working to address the homeless and other food insecure populations. The **Brockton Area Hunger Network (BAHN)** works in partnership with various organizations to identify gaps in services for the hungry, coordinate local hunger services, develop projects that address local hunger, and educate the community about issues of hunger and food security.

Brockton's Promise, a nonprofit coalition focused on youth development, identified twenty-one community gardens throughout Brockton in a recent analysis. This analysis identified eight community gardens and twelve school gardens throughout Brockton. Community events such as the annual seed, bare-root, and plant swap take place in these gardens including **Frederick Douglass Community Garden**.



Source: Brockton's Promise

Brockton's Promise and Stonehill College partnered to locate community and school gardens in Brockton.

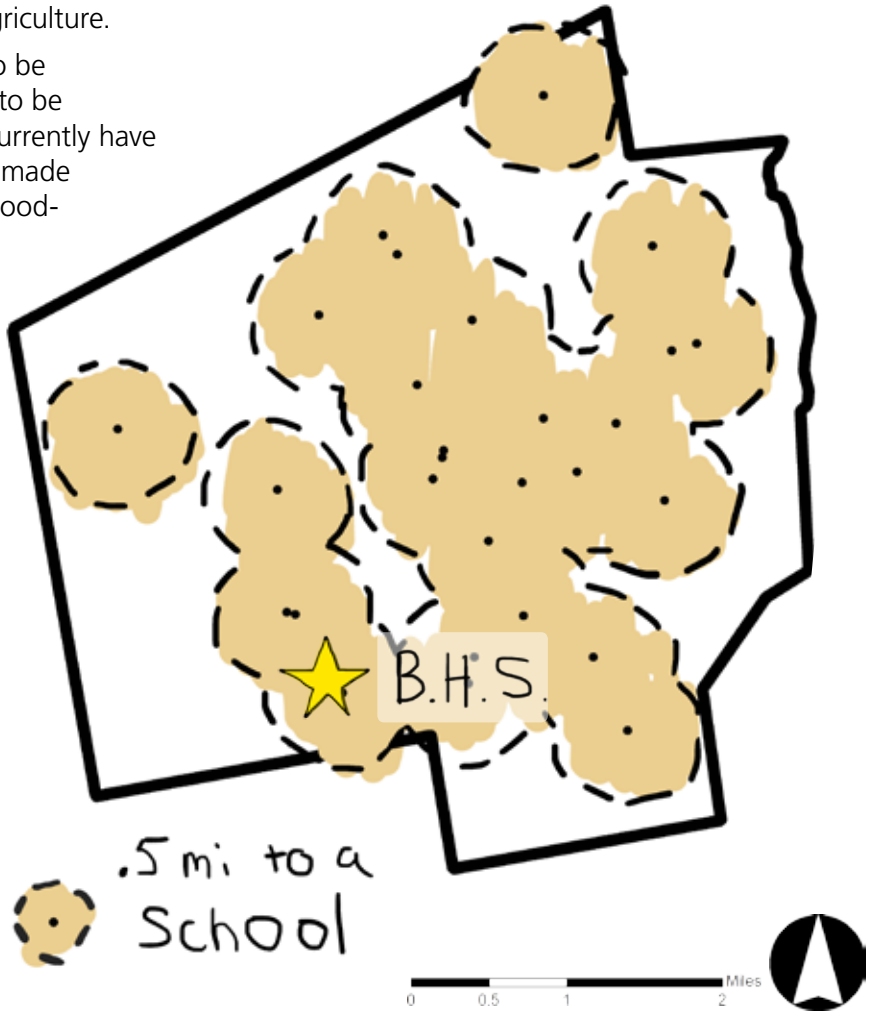
SOCIAL CONTEXT

CONSIDERATIONS: SCHOOLS

In other urban areas, schools have been important places for growing food and training children, parents, and teachers about food and agriculture. Brockton is known regionally for its robust and ethnically diverse educational system. Twenty-six public schools, pre-K through high school, serve 17,431 students, including Brockton High School, which is attended by 4,400 students from throughout the region. The high school garden is one of the largest food production systems in Brockton. Given its success there may be opportunities to use other school grounds for growing food. There are approximately 45 public and private school-owned properties with a total of 375 acres, including buildings, and parking. Further research is needed to determine how much of that land is suitable for agriculture.

There is potential for the schools to be community food hubs though still to be determined is how many schools currently have commercial kitchens that could be made available to the community, what food-storage facilities could be of use, and whether on-site processing could be a possibility for students or local businesses. Schools may also host community gardens and educational gardens, or a mix of both.

A community college, vocational skills development center and numerous smaller vocational and adult learning programs serve hundreds of residents and out-of-town students. Massasoit Community College (MCC), in the eastern part of the city, owns approximately 103 acres of land (Massasoit). Further exploration is required to determine if MCC may be suitable to host food system and agricultural training programs, or an incubator farm.



AREAS WITHIN A TEN-MINUTE WALK TO A SCHOOL

CONSIDERATIONS: TRANSPORTATION

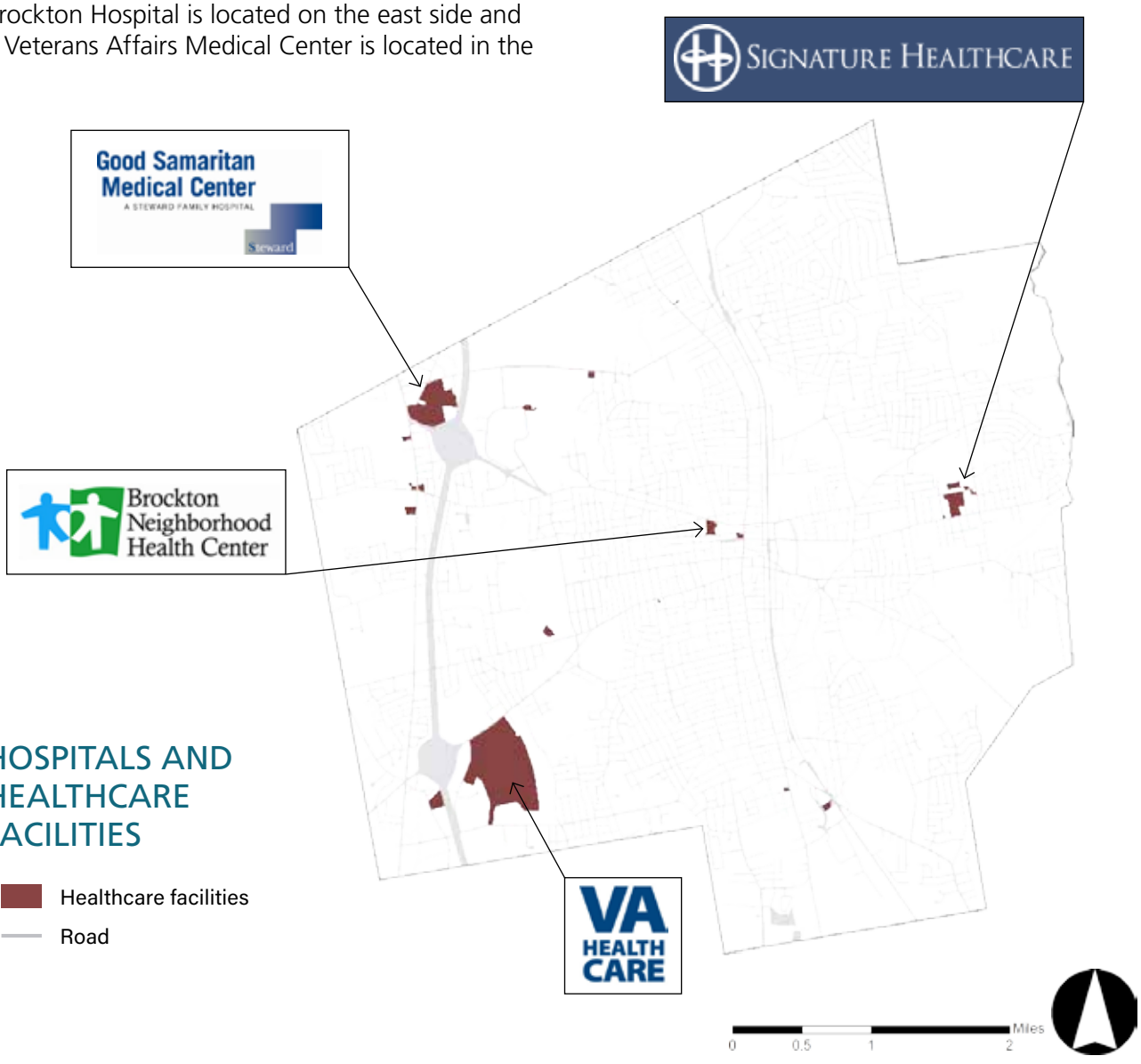
The extensive public transit system, supported by Brockton Area Transit (BAT)—a remarkable asset to the community—could offer residents access to multiple aspects of an expanded food network city-wide. 75 percent of Brockton is within a ten-minute walk of a BAT bus stop or route. This bus system serves about 10,000 weekday riders on its fourteen routes, which extend into adjoining communities. Most of Brockton's residents are within reach of an affordable, timely city-wide public transportation system .

What is not known is how well the bus system connects residents to existing components of the food system, and potential farmable sites including parks and open spaces, schools, and vacant parcels. Accessing these sites is crucial for users who lack access to a vehicle or are mobility-limited. Determining which sites are not served, and which communities are least served, requires further investigation.

AREAS WITHIN A TEN-MINUTE WALK TO A BAT ROUTE

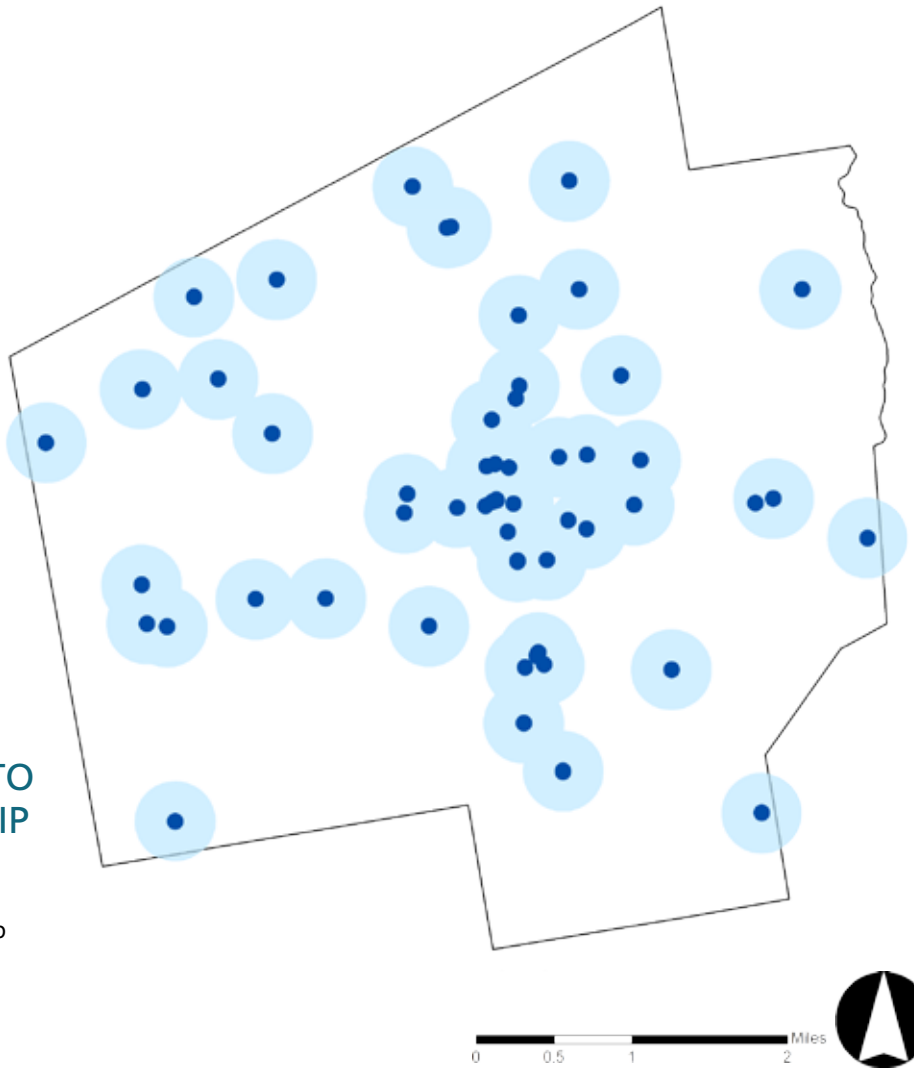
CONSIDERATIONS: HEALTHCARE

Healthcare institutions are invested in the promotion and support of healthy lifestyles and as institutional food consumers are important potential partners in developing a food network. There are three major medical centers in Brockton—Brockton General Hospital, the Veterans Affairs Medical Center, and Good Samaritan Medical Center. Good Samaritan is actively engaged in public health efforts and has indicated its interest in developing a program to promote public health through urban agriculture. Brockton Hospital is located on the east side and a Veterans Affairs Medical Center is located in the southwest, near Brockton High School. Another example of the ways in which the healthcare industry in Brockton is contributing to and supporting food systems in Brockton is the collaboration between Brockton Neighborhood Health Network and Vicente's Supermarket to raise public awareness about the need for greater access to healthy food for seniors and individuals with limited mobility.



CONSIDERATIONS: HOUSES OF WORSHIP

Brockton's diverse population supports an extensive network of churches, temples, and faith community centers. The ubiquity of churches indicates their strength as hubs of the community. The Brockton Interfaith Council (BIC) is composed of leaders from many faiths, faith-based and non-denominational organizations, and is an example of local leadership and community development. BIC works with and among congregations and communities in Brockton addressing issues of racial inequality, including underrepresentation of communities of color in city affairs, and develops and supports grassroots efforts addressing these challenges. The BIC may be a crucial city-wide leader in building a more robust and inclusive food system in Brockton. Because of their distribution throughout the city, and connections to many Brockton residents, houses of worship may be potential sites for exploring urban agriculture and expanding food access to residents.



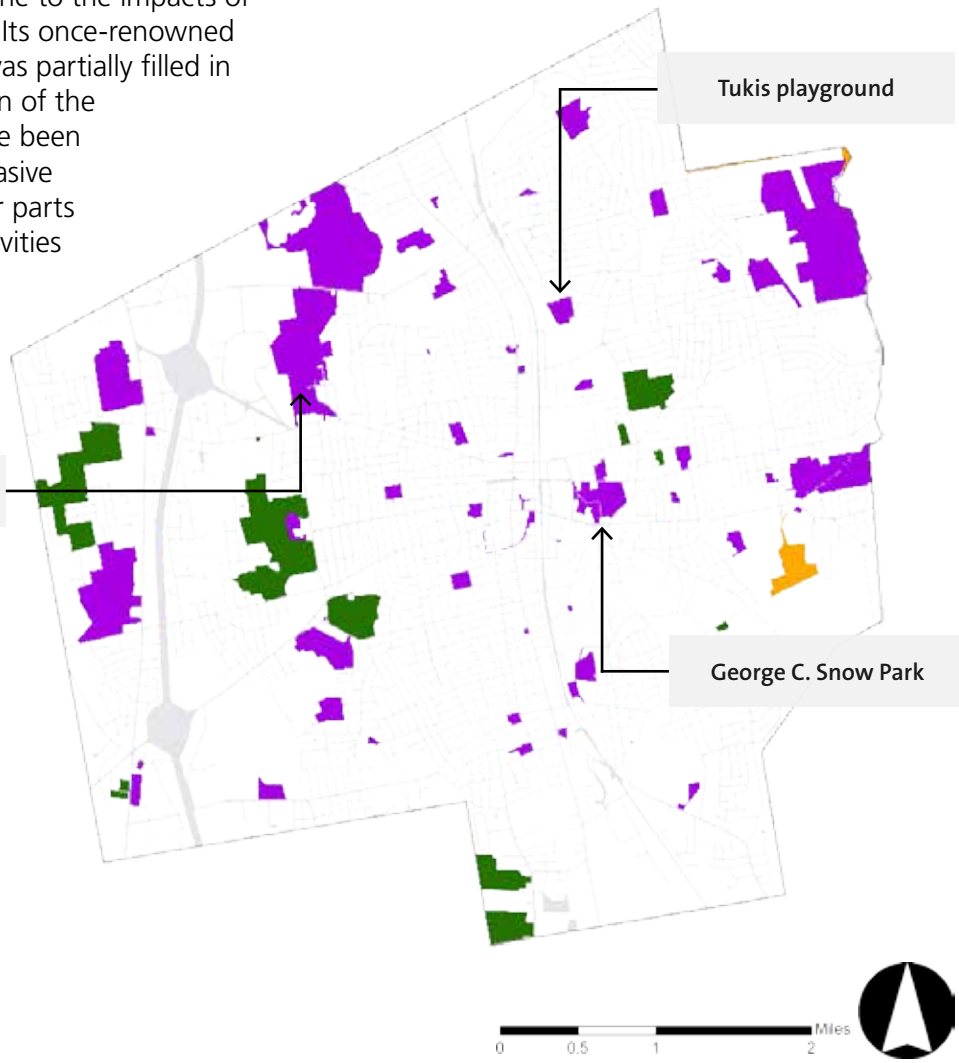
AREAS WITHIN A TEN-MINUTE WALK TO A HOUSE OF WORSHIP

ENVIRONMENTAL CONTEXT

CONSIDERATIONS: OPEN SPACE

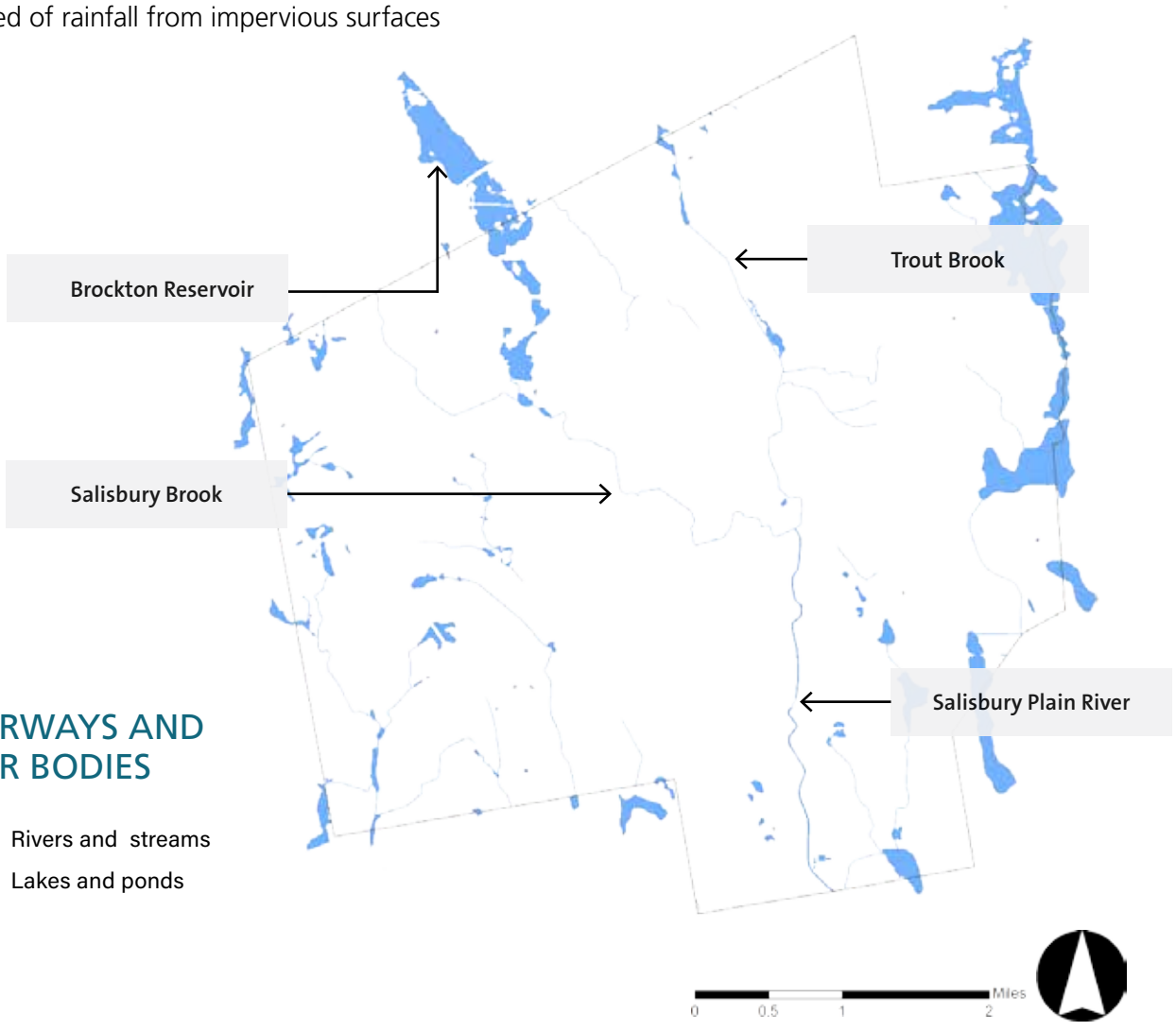
The largest contiguous parcels of land potentially suitable for agriculture in Brockton are open spaces. Open spaces in Brockton include parks, athletic fields, private golf courses, conservation land, waterways, and current agricultural land owned by the City, state, or private groups like land trusts or faith-based organizations. As a result of development, Brockton currently has only 16.3 acres of open space per 1,000 residents, the second lowest in comparable southeastern Massachusetts cities (Land Use Trends 2016). The majority of the parks are in disrepair and many residents are unaware of park locations and availability (per OSRP). Even the historic 756-acre D.W. Field Park is not immune to the impacts of development and disrepair. Its once-renowned Ellis Brett Swimming Pool was partially filled in with soil during construction of the Westgate Mall and has since been overtaken by numerous invasive species, as have many other parts of the park (COB). Illicit activities are said to occur along its trails, preventing residents from using anything but the roadways where visibility is clear. D.W. Field Park extends into Avon to the north, containing and protecting the Brockton Reservoir. It is one of the few parks that residents are aware of.

The parks budget was less than one percent of the City's 2016 operational budget (COB). Much of this money has been spent on updating or maintaining playground equipment (per OSRP). The Parks Department have access to limited resources for parks where the need for improvement is considered most urgent. Effective upkeep and management of parks may require soliciting the community at large to participate in these efforts.



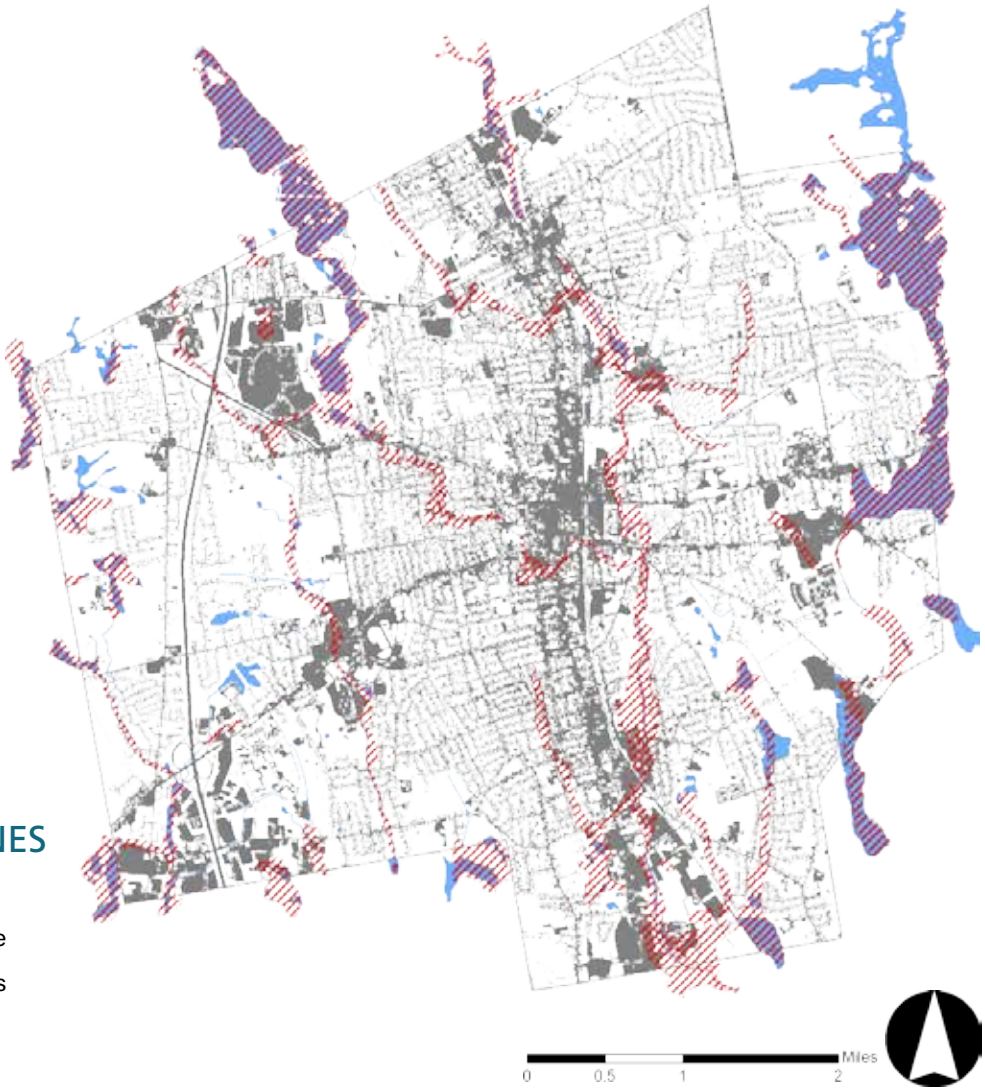
CONSIDERATIONS: WATERWAYS

According to resident accounts, the waterways in Brockton, including the Salisbury Plain River, Salisbury Brook, and Trout Brook, are not suitable for swimming, boating, kayaking, or fishing. They have been in need of dredging and remediation for decades. At a recent community meeting one resident recalled playing in the Salisbury Plain River as a child and being "burnt by the sediment that had accumulated on the bottom." This potentially toxic sedimentation may be a result of past industrial use contributing pollutants to waterways and bodies. On-site Erosion throughout the waterways is has resulted, in part, from the waterways being culverted and channeled of rainfall from impervious surfaces (Two Rivers 2012). Encroachment of development exacerbates these issues and contributes to continued degradation of habitat; there is an accumulation of trash and pollutants in waterways. The extent and severity of these issues is not completely known, although past studies indicate testing is required (2012). Most waterways are inaccessible to the public due to chain-link fencing and private property. In some cases, like that of the War Memorial in downtown, buildings require frequent maintenance because they were constructed on filled-in ponds and waterways (COB).



CONSIDERATIONS: IMPERVIOUS SURFACES

Impervious surfaces cover 36 percent of the land in Brockton, including 261 miles of road. Many of these roadways and impervious surfaces exacerbate perennial flooding, especially in areas where soil drainage is poor. Large areas of Brockton are within the 100 and 500-year flood zones determined by the Federal Emergency Management Agency (FEMA). Areas in flood zones are reported to flood frequently in Brockton, even during moderate rainfall events, for example thunderstorms. It is possible extent of impervious surfaces contributes excessive drainage to waterways during rainfall events, and that By increasing the amount of vegetation and improving the capacity of soil to infiltrate and store water, urban agriculture can help reduce runoff, filter rainfall, and potentially mitigate flooding.



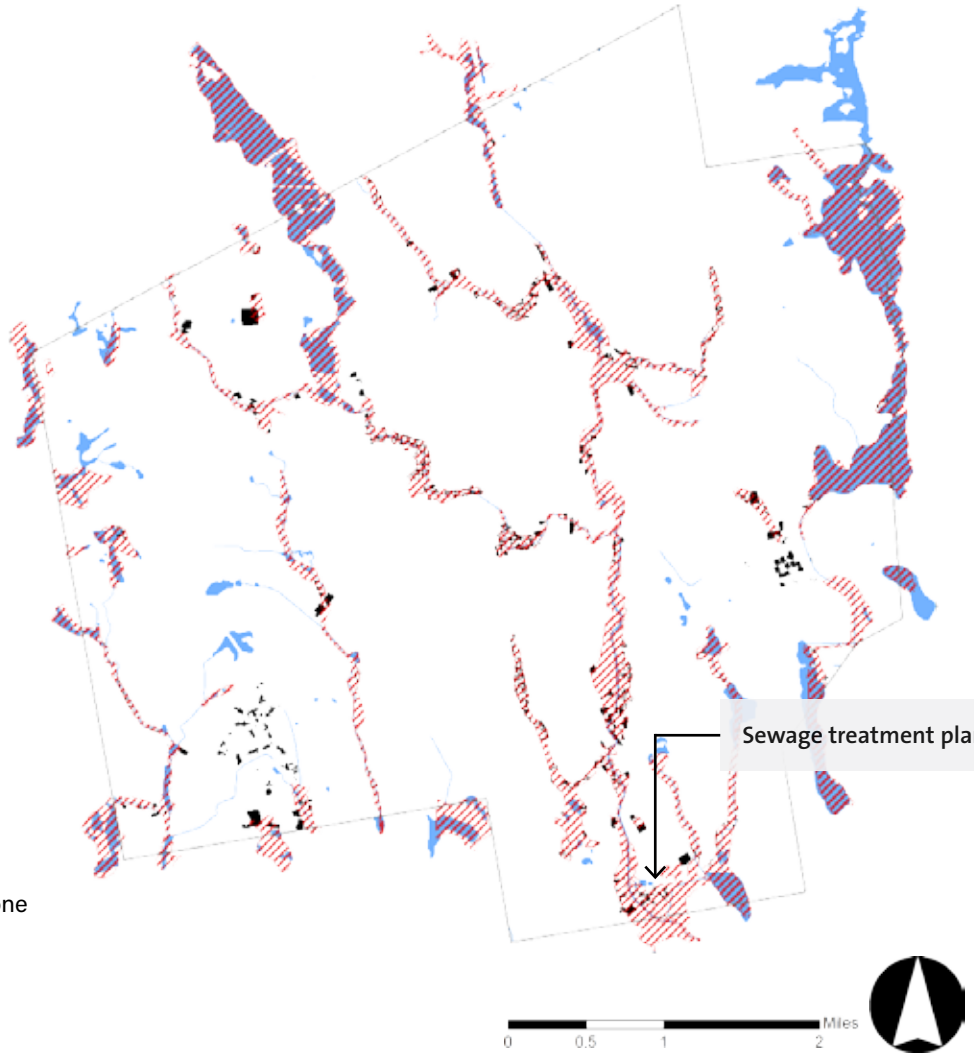
IMPERVIOUS SURFACES AND FEMA FLOOD ZONES

- FEMA flood zone
- Impervious surface
- Rivers and streams
- Lakes and ponds

CONSIDERATIONS: FLOODPLAINS

Floodplains can have rich bottomland soils that support agricultural production. In Brockton, these areas are developed and the adjacent waterways are impaired. Approximately 40% of the flood zone (630 acres) is developed, including 1200 structures that are at risk of flood. Agriculture may replace development in the flood-prone areas, however this depends on the conditions and health of these waterways. Encroachment of development exacerbates flooding and contributes continued degradation of habitat where today there is an accumulation of trash and pollutants in areas in and around surrounding waterways. Where agriculture is appropriate in these areas there is a potential to embed flood mitigation strategies alongside production. Is there potential to link smart growth initiatives with agricultural initiatives?

According to a FEMA risk-assessment report conducted in , commercial and industrial buildings, residences, and public building—including the sewage treatment plant—are at risk of flooding.

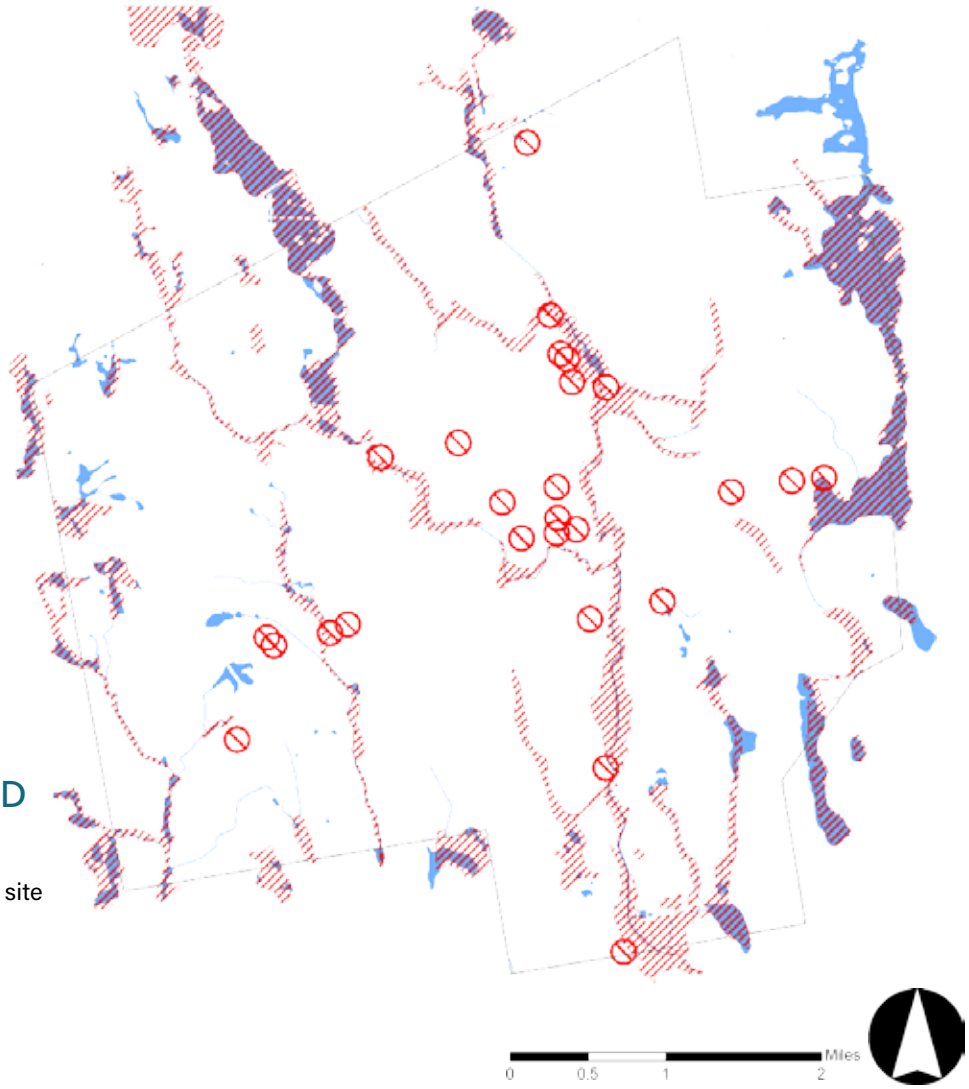


STRUCTURES IN FLOOD ZONES

- FEMA flood zone
- Structure in flood zone
- Rivers and streams
- Lakes and ponds

CONSIDERATIONS: CONTAMINATED SITES

Brockton's industrial past suggests pollutants are likely to be present. The Massachusetts Department of Environmental Protection (DEP) has information on sites with soil contamination. There are currently twenty-four registered sites with soil pollutants in Brockton. The pollutants range from hydrocarbon to heavy metals, the majority being hydrocarbons. There is currently at least one known site contaminated with asbestos not listed on the DEP HAZ-MAT list located on Montello Street. This fuels suspicion that there may be other sites of concern.



MASS DEP HAZ-MAT SITES AND FLOOD ZONES

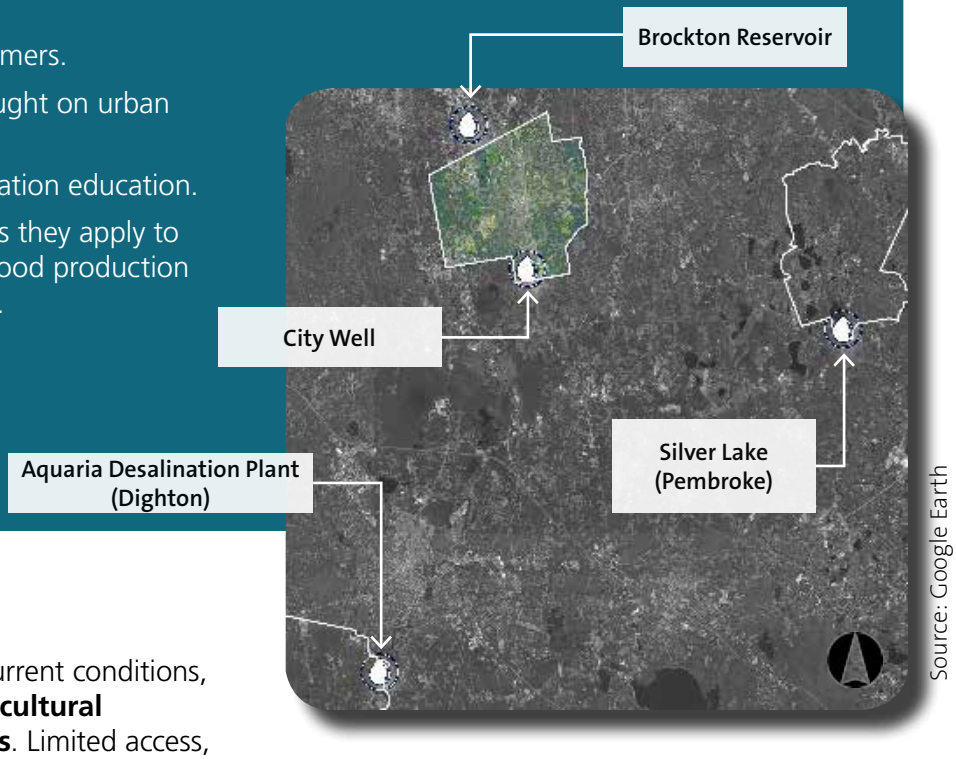
CONSIDERATIONS: WATER SOURCES

MUNICIPAL WATER

Any agricultural operation or food processing facility will need access to clean water. Municipal water is sourced from Silver Lake in Pembroke, the Brockton Reservoir in D.W. Field Park, and Aquaria Desalinization plant in Dighton whose construction was partially funded by the city (see map below). The latter is not currently a source of water, but remains a potential source if surface water resources are limited. Nonetheless, the city is bound to a ten-year contract with the plant at a cost of $120 million.

The 320 miles of waterlines in the city are aging and plagued by leaks, inefficient pumps, and failing mains. In the past, there was a moratorium on water connections because demand exceeded supply. Municipal water connections remain costly to implement. The city and urban farmers should consider:

- Cost-breaks for urban farmers.
- Mitigating impact of drought on urban agricultural water use.
- Promoting water conservation education.
- Food safety regulations as they apply to municipal water use for food production and rainwater catchment.



Source locations of Brockton's municipal water.

CONCLUSION

As a result of researching the current conditions, it is **not advisable to site agricultural production in the floodplains**. Limited access, extensive pollution, and unpredictable flooding events are not conducive to supporting small agricultural efforts. It does lead to questioning what steps might be taken to improve waterway conditions to the point that agriculture would not be severely compromised through contact of water during flood events. It also means that the water is not suitable for irrigation purposes. This will require other potential sources like municipal connections or rain catchment and storage.

CRITERIA AND SUITABILITY

To determine where in Brockton agriculture might be suitable, an analysis of land is required. This section provides a preliminary assessment of land that identifies parcels by their general land use type. This general set of criteria could be refined for future use to identify specific parcels suitable for different production types.

CRITERIA DEVELOPMENT

Once the broad patterns of land use and limitations are understood, the next step is to look at the individual parcel level. To address the first goal of the community of *access to land for food production*, the suitability of land for various types of food production was assessed. At this scale, a new set of criteria was necessary. Criteria for identifying parcels suitable to traditional in-soil agriculture were developed from available data through the City of Brockton and the Commonwealth of Massachusetts. Criteria were selected based on relevancy to land suitable for agricultural use and then applied to different types of current land use beginning with **vacant parcels**.

Criteria included:

- Parcel size
- Legal ownership
- Land use/zoning
- Presence of structures
- Surface permeability
- Proximity to wetlands and floodplains
- Proximity to polluted/toxic soils
- Soil type
- Biomap2 Habitat (**absent in Brockton**)
- Prime Forest (**absent in Brockton**)

VACANT PARCELS

Vacant parcels were the first land-use type assessed. They are most likely to be made available to the public or to private enterprises, have negative environmental and social impact on the landscape, and are dispersed throughout the city.

LIMITATIONS OF DATA

Data layers provided by the City of Brockton Planning Department, Building Department, and from MassGIS were used in conjunction with recent three-dimensional aerial orthoimagery in Google Earth Pro for identifying parcels and site conditions. Limitations to data accuracy include:

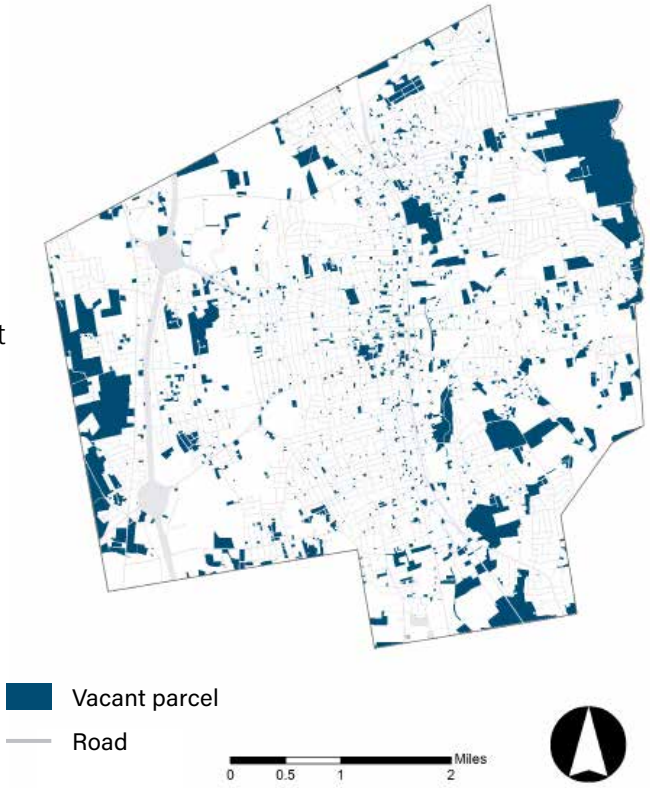
1. Out-of-date data from City of Brockton
2. MassGIS layers from 2010 census
3. MassGIS land use data from 2005

Source: Google Earth

An example of three parcels that are city-owned and identified as being vacant and pervious. In actuality they are parking lots.

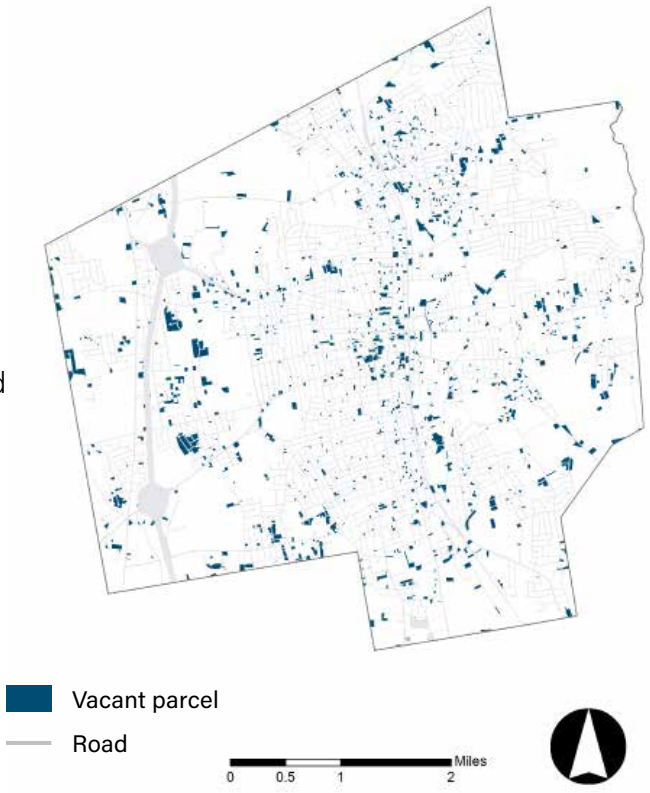
Present vacant parcels without structures

- These vacant parcels include both publicly and privately held parcels.
- Largest contiguous vacant parcels are conservation lands to the west and State-owned land to the northeast, followed by central-eastern strip of utility and city-owned parcels, most of which are unavailable for agriculture.
- The east side has the highest density of vacant parcels without structures.
- Urban agriculture may take place on smaller, non-buildable, non-contiguous parcels.



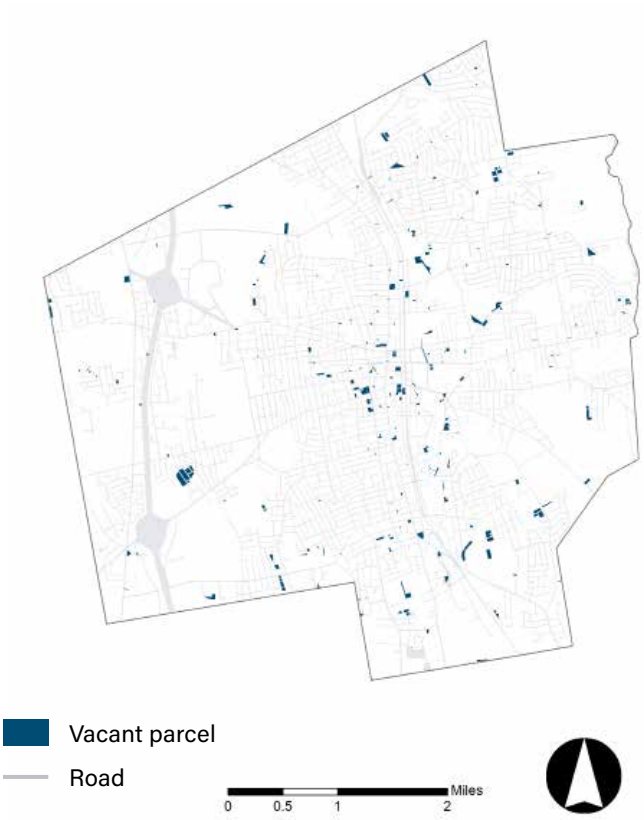
Eliminating parcels greater than 8,000 square feet in area (minimum buildable lot size for a single-family home construction)

- Parcels below 8,000 square feet are ubiquitous.
- The parcels are heavily concentrated near main vehicular arteries. This may indicate ease of access for most residents.
- The west side by Route 24 has the largest remaining contiguous parcels.
- These include both private and publicly owned parcels; publicly held lots are the easiest for the city to provide access to.



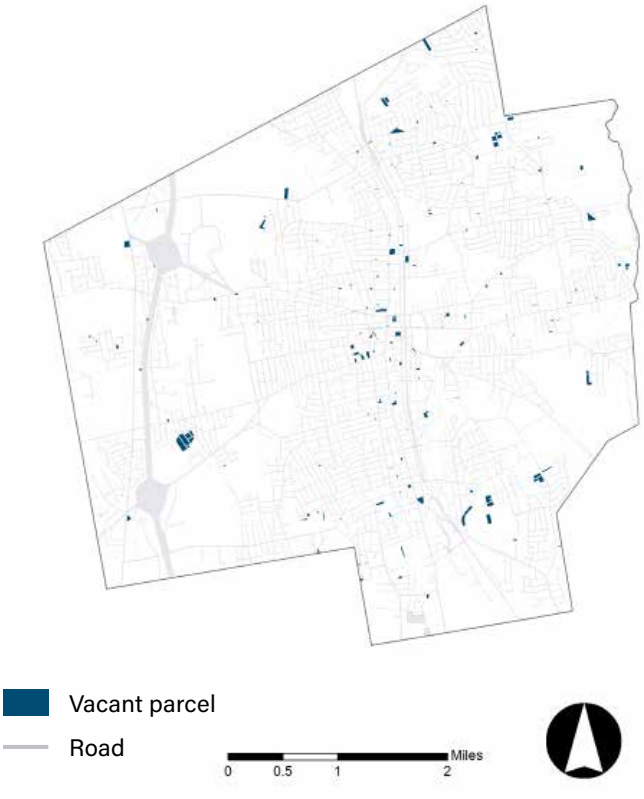
Eliminating privately owned parcels

- The City of Brockton owns approximately 405 vacant parcels (116 acres) without structures and below the buildable lot limit.
- The majority of these parcels trend along the railway spine.
- The concentration of parcels in the downtown core could enable access for those who rent or have insufficient space for home gardens.



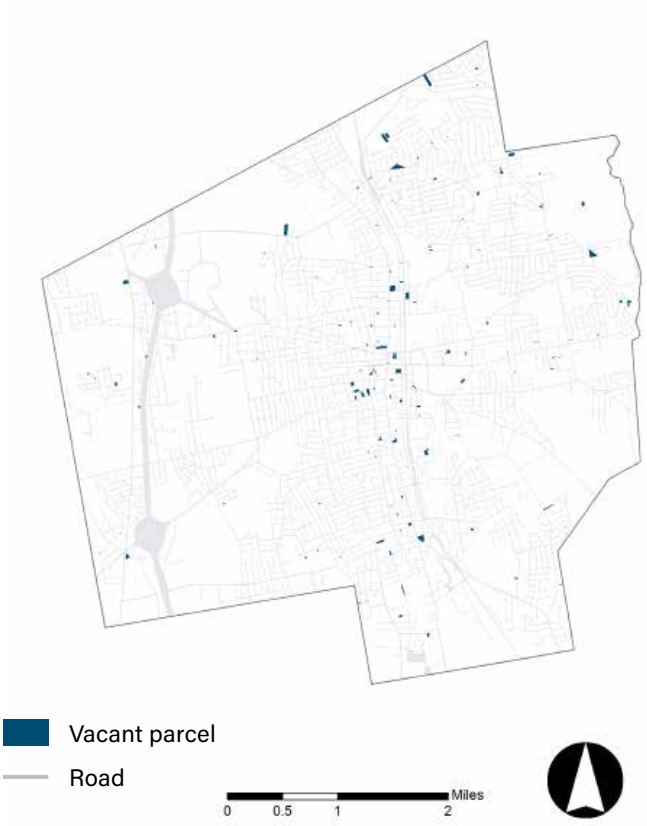
Eliminating parcels in the flood zone

- Historic pollution in the river indicated that farming in flood zones is not advisable at this time.
- There is a conspicuous gap between the core concentration of these parcels downtown and a ring of parcels around the periphery of Brockton.
- These parcels are distinctly absent in single-family residential areas, potentially indicating that urban agriculture on vacant parcels may be more important where land ownership is least.



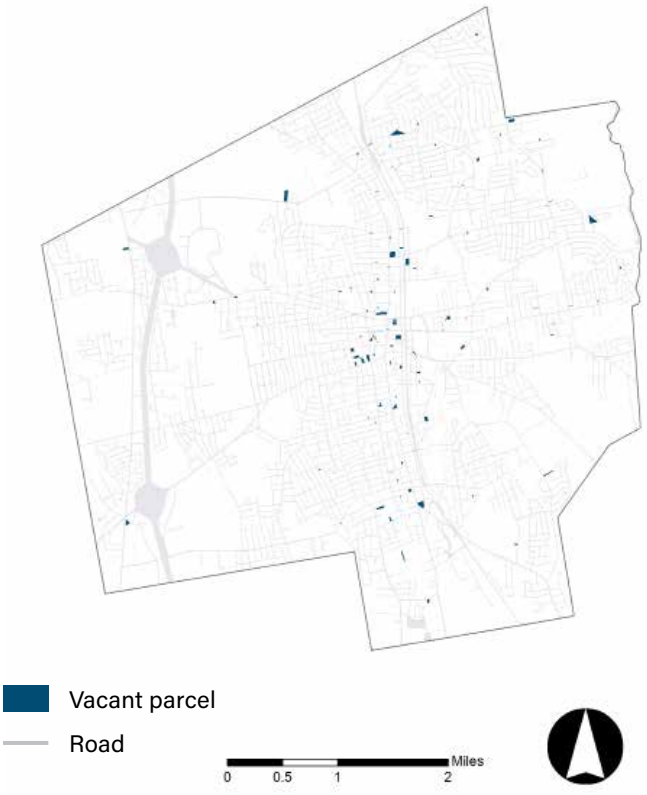
Eliminating parcels in wetlands

- There is only a slight reduction of parcels between flood zones and wetlands elimination maps.
- The wetland parcels removed were in the northwest, northeast, southwest, and southeast parts.
- What remains is concentrated within the urban corridor where waterways and water bodies have been heavily altered.



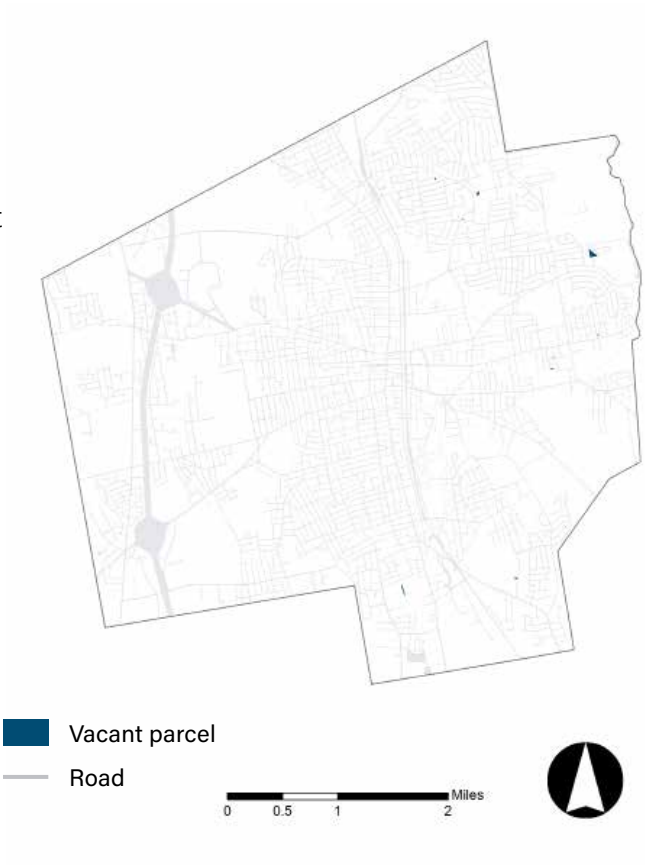
Eliminating parcels with impervious surfaces

- The greatest reduction of parcels is around the periphery.
- Focusing agricultural development on vacant parcels may make most sense within the downtown core, where visibility, access, and lot densities are greatest.



Eliminating parcels without farmland soils (prime and of state importance)

- When parcels are reduced to those with farmland soils, it leaves 3.65 acres over eleven parcels.
- Traditional agriculture is not suitable on vacant parcels according to this preliminary analysis.



CONCLUSION

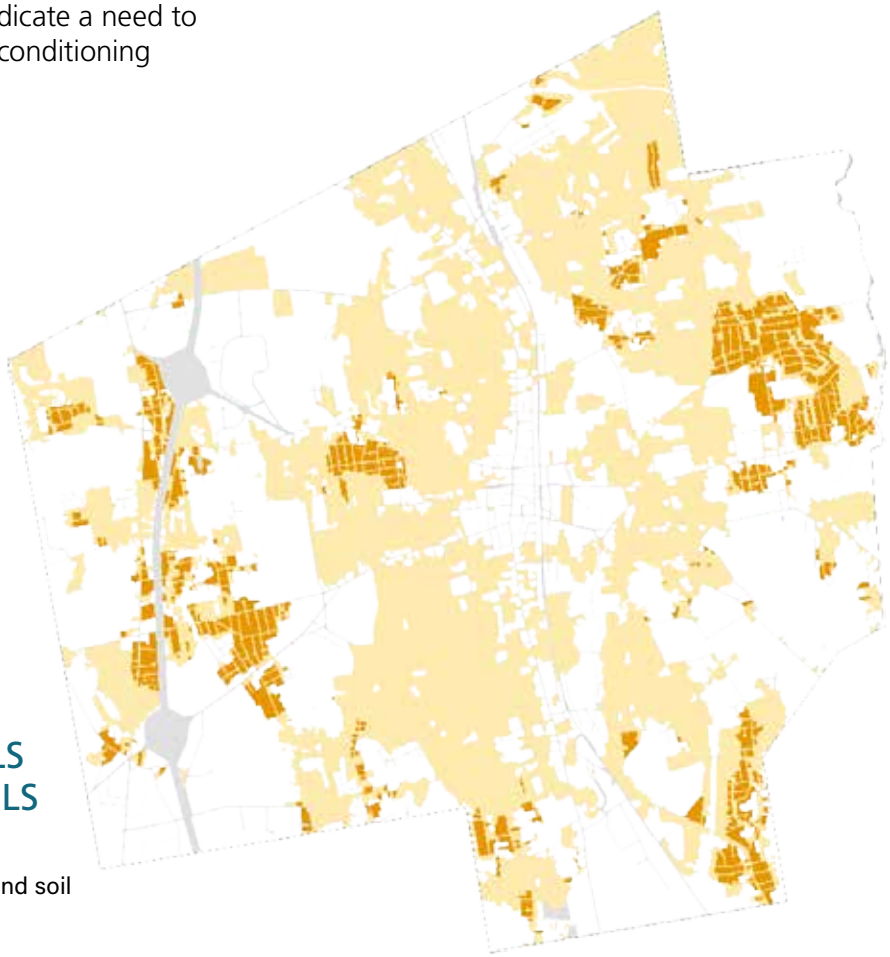
The most apparent pattern at the end of this process is how few vacant parcels meet the criteria for traditional agriculture. This may mean relaxing the criteria or acknowledging that traditional in-soil agriculture might not be best suited for most vacant lots. The absence of habitat or prime forest land within Brockton raises the question, is there a potential for forestry-based agriculture? Or agriculture that creates certain types of habitat? There was no apparent overlap between DEP HAZ-MAT sites and vacant parcels; however this was interpreted as a sign that a thorough investigation of soil conditions in the city has not been conducted. No site should be put into production without environmental tests conducted on site. (See Appendix X for resources)

LAND SUITABILITY CITY WIDE

IDENTIFYING PARCELS: RESIDENTIAL

Residential development constitutes the largest percentage of land use—46 percent of the city (Land Use Trends 2016). Evidently, the largest percentage of farmland soil by land use is located in residential parcels. The majority of these areas were developed between the 1950s and 1970s and 2000s.

It will require further investigation to determine where buildings and pavement limit agricultural use on residential parcels. There were a few areas in which the parcels were located in the 100-year flood zone. This pattern of residential land use on farmland soil suggests that initiatives to supply resources to home gardeners and farmers could be beneficial. It might also indicate a need to educate residents about soil-conditioning practices for areas with non-prime farmland soil. Primarily larger lots have access to these soils, which has implications for lower-income households, renters, and immigrant populations. It might indicate that for those living in the more urbanized areas of Brockton, the vacant parcels become crucial to food sovereignty.



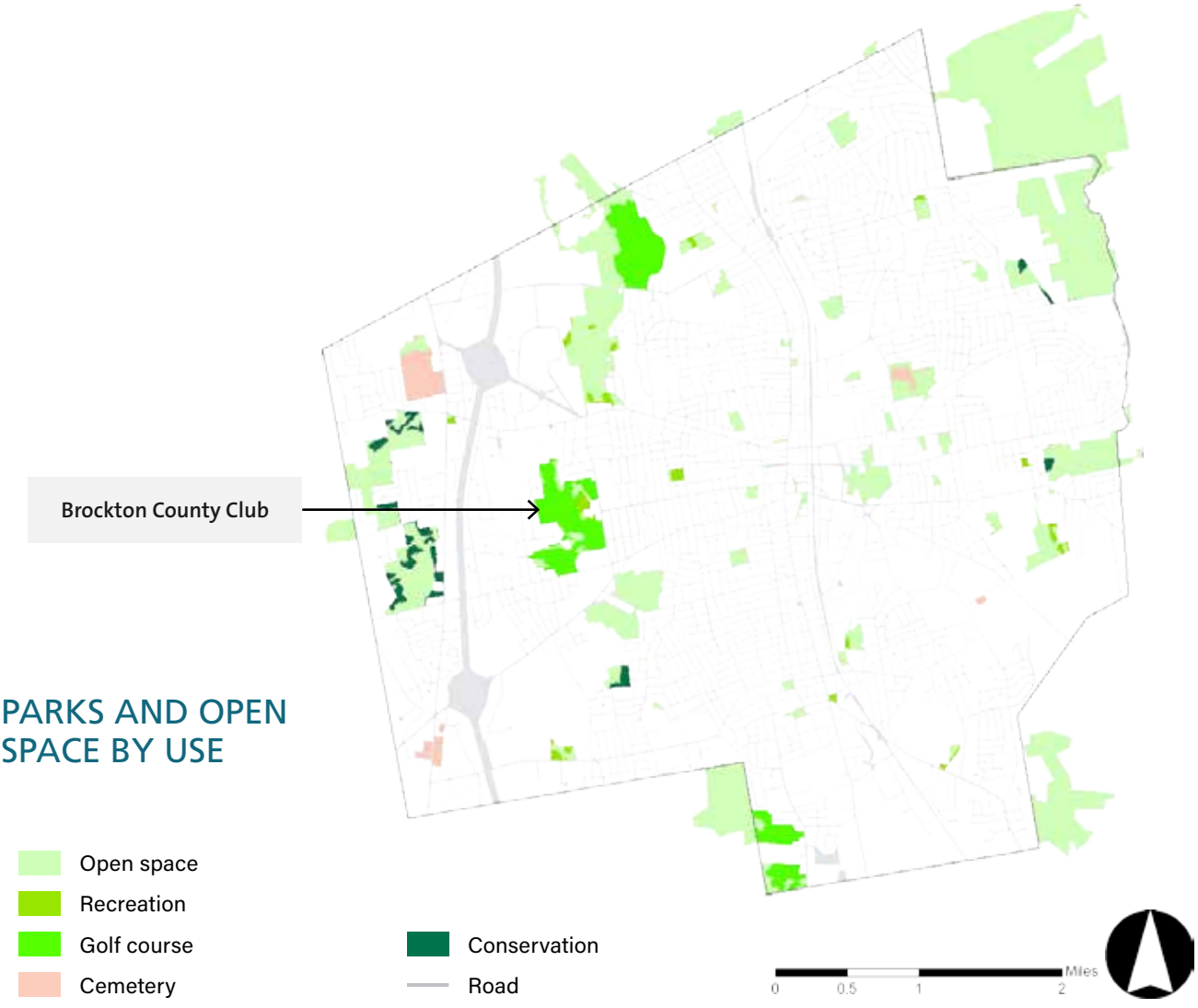
RESIDENTIAL PARCELS AND FARMLAND SOILS

- Residential with farmland soil
- Residential
- Road

0 0.5 1 2 Miles

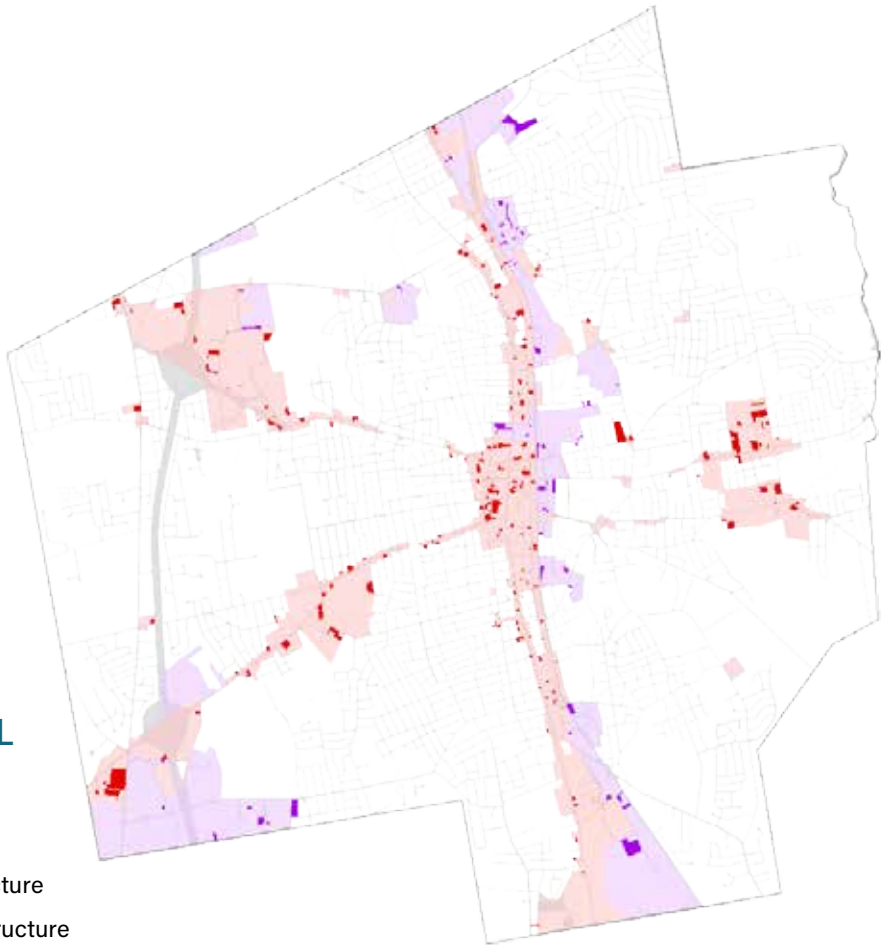
PARCELS: PARKS AND OPEN SPACES

Various open space and recreation parcels were analyzed for their agricultural suitability based on presence of farmland soils and absence of flood zone or wetland areas. The recreation parcels all have prime farmland soils. The largest open space use type with farmland soil is currently golf courses, such as the Brockton Country Club. The next largest open space use are cemeteries, which are not suitable for agriculture, followed by conservation land, the northern portion of which is currently forested. To understand how and where to conserve, protect, and restore Brockton's environmental assets, agricultural potential needs to be weighed against other environmental and recreational values. Given its proximity to golf courses, Brockton Country Club could be re-purposed for further commercial production. Other than that there are very few open space options available that meet these initial criteria.



PARCELS: INDUSTRIAL AND COMMERCIAL

Alternative forms of agricultural production, including hydroponics, aeroponics, and aquaponics, are of growing interest in urban areas. Vacant commercial and industrial parcels were evaluated for their suitability for these typically indoor operations. Vacant commercial and industrial lots outside of flood and wetland zones hug the five main arterials in Brockton, running west to east and north to south. Along the center of Brockton, industrial buildings abut the railroad and the Salisbury Plain River. The buildings in Brockton are largely wood and/or masonry. Sites along major roadways make them easy to access and therefore potentially suitable for farmers markets, food distribution centers, vertical or indoor farms, and restaurant or food processing businesses.



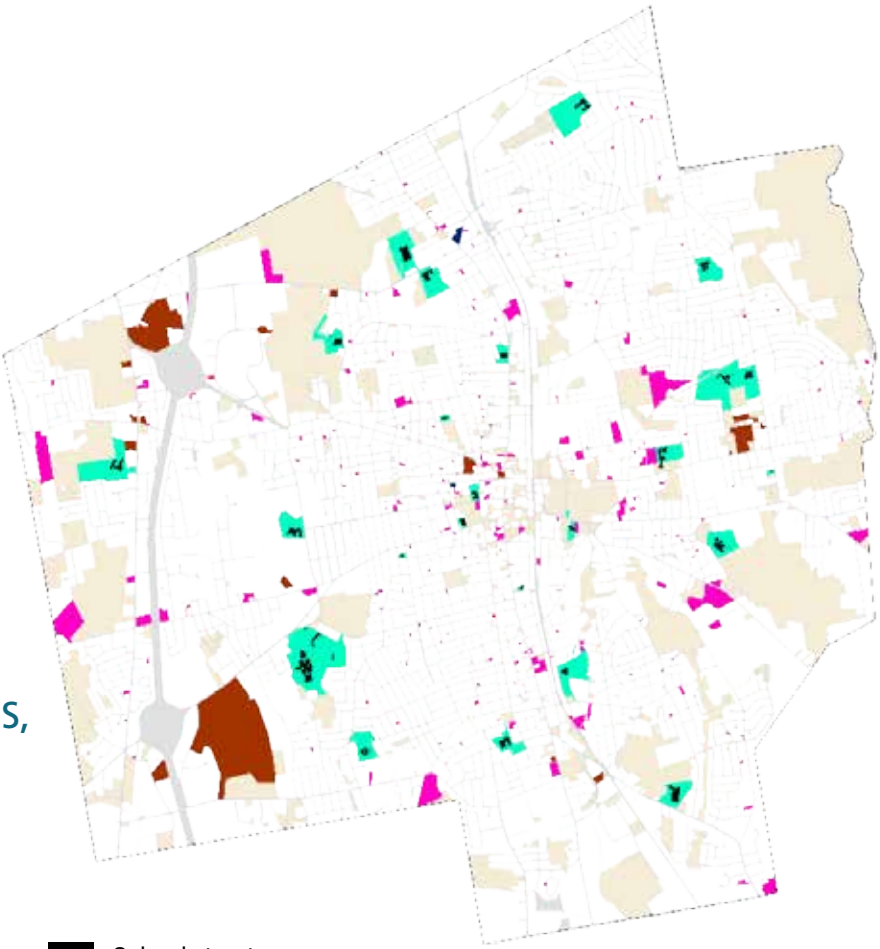
VACANT INDUSTRIAL AND COMMERCIAL STRUCTURES

- Vacant industrial structure
- Vacant commercial structure
- Industrial zone
- Commercial zone
- Road

PARCELS: SCHOOLS AND CHURCHES

The second community goal was to link agriculture with education. An assessment of school parcels throughout Brockton shows distribution of school properties in two major patterns: 1) larger parcels are located on the periphery of the downtown center 2) and smaller, more numerous, parcels clustered in the center. Larger school parcels tend to contain more available open space compared with the smaller parcels because the built footprint accounts for a smaller percentage of total parcel area. There are also two school properties that are currently vacant and could provide the facilities for local food hubs, commercial kitchens, or other valuable facilities.

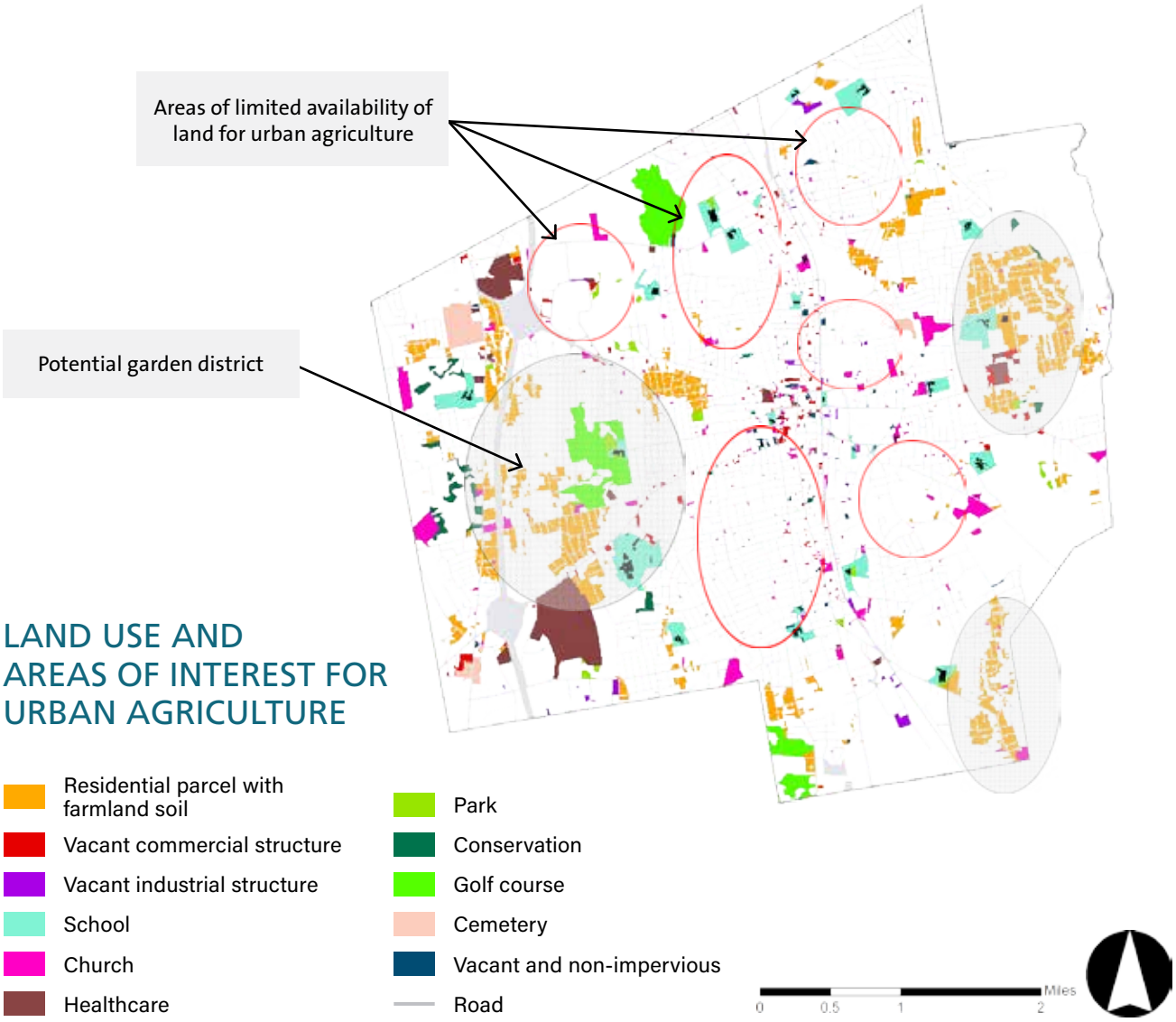
The largest healthcare properties form a triangle. These could be area hubs for farmers' markets or CSA pick-ups. There are over 200 ubiquitous church properties including the sixty-five represented in the previous map, that could function similarly to schools as locations for community gardens, garden events, or other agriculture-related activity.



LAND SUITABILITY SUMMARY

A BROAD RANGE OF OPTIONS

The composite map shows a broad range of parcels with conditions potentially supportive of both traditional and non-traditional forms of urban agriculture. Areas of the city could be designated as Garden Districts as cities like Cleveland have done. There are potentially three main clusters for the city to focus efforts initially as Garden Districts. There are also approximately six smaller areas that are residential and without significant land opportunities for agriculture identified in this preliminary land assessment. Establishing management priorities for each land use type, and developing policy and best-management practices based on those uses are a potential next step.



CONCLUSION

These analyses show that agricultural and other food systems efforts and supporting conditions are already in place in Brockton. There are services such as the extensive transportation network that could be used to connect consumers to sellers and producers and workers to employment sites and support new ventures; an array of schools and educational institutions; dozens of churches and faith centers; and a robust healthcare industry. At the same time, the history of land use in Brockton is a source of persistent concern for agriculture and environmental health; in particular, its industrial past, heavy development, and the cycle of decline continues to characterize the waterways within Brockton.

As a result of these observations, it is clear that repurposing of land for agriculture is a necessity. Environmental concerns may lead the City and other organizations to consider investing in relationships with agricultural enterprises regionally and emphasizing other aspects of the food system such as processing, because the infrastructure may be better suited to support it.

VISIONS

VISIONS FOR THE FUTURE

NOVEL APPROACHES

These are unique and unprecedented times that call for grassroots leadership, fresh thinking, and novel approaches to solving challenging societal issues. Developing urban agriculture in Brockton will undoubtably unfold as an iterative, community-led process. If it is to be truly inclusive, and sustainable—economically, socially, and environmentally—this approach will be necessary, for example, to define equitable policy around complex issues like rearing of chickens in urban areas.

Due to the legacy of industrial and residential development and lack of a strong coordinating support system, the food network in Brockton is small-scale and functionally discrete. But Brockton residents are young, diverse, positioned between two major cities and have ubiquitous access to public services and amenities, indicating enormous potential. This brings up the guiding question: **How do agriculture and food systems take form and function in a post-industrial city?**

Successful urban agricultural systems:

- Are nested in and relate to local, regional, and global food systems;
- Have numerous social, economic, and environmental benefits that have enriched cities since the advent of civilization and throughout the history of the United States;
- Have a wide range of economic forms; and
- Are limited in form and function only by imagination and available resources.

VISIONS FOR BROCKTON

In Brockton, urban agriculture can begin with the opportunities that exist and expand over time. Like a vacant lot that slowly fills in with vegetation, you begin with the cracks in the pavement and slowly open up more ground. Urban farms begin with the vacant brownfields, vacant commercial and industrial buildings, school grounds, home gardens, and public spaces. The following offers several possible future visions for Brockton to implement urban agriculture through educational institutions, on formerly industrial spaces, vacant commercial spaces, on residential properties, and in parks and public open spaces.

A vacant lot in downtown Brockton

UTILIZE EDUCATIONAL INSTITUTIONS

Photo Source: TC3 Farm

AGRICULTURE AND HIGHER ED

Tompkins Cortland Community College (TC3) recognized an increased focus on food systems education nationwide. Located in Dryden, New York, an emerging mecca for local agriculture, TC3 sought to align the college's career-focused academic programming with the local food system. In particular, recognizing a growing need for trained, experienced practitioners in culinary arts, food distribution and marketing, and agriculture, the school developed an innovative program. In 2014 it initiated two new degrees—Sustainable Farming and Food Systems and Culinary Arts—combined with two existing programs—Wine Marketing and Hotel and Restaurant Management—as part of its Farm-to-Bistro program. A student-operated TC3 Farm adjacent to campus and restaurant Coltivare serves as learning labs for students on every facet of the local food system.

The Sustainable Farming and Food Systems program seeks to train individuals to develop professional and practical skills to start and manage a farm. TC3 Farm is a recent acquisition of the college and supports a vegetable growing operation and CSA. Students in any one of the four food systems degrees as well as from other departments take classes on the farm. Students take labs held on-farm including soil science, agroecology, and integrated pest management; food-systems classes with students from the three programs; and internships with local area producers, farmers, and restaurateurs. Learning-by-doing is a critical focus of the program and includes managing the for-profit student-operated farm, requiring students to strike a balance between academics and professionalism. In turn, participants are well-versed in the food system at multiple scales and can apply practical knowledge towards careers built around sourcing and providing food locally.

LESSONS FOR BROCKTON

A farm can start at an educational institution itself become a multidisciplinary educational hub. TC3 Farm is a learning space for students from biology, writing, and arts departments as well as the Farm-to-Bistro program. It is a working example for visitors to see a food-system model in action and a case study for other colleges and programs seeking to develop their own.

A food system educational program can promote and enhance components of an existing food system within the city. The TC3 Farm-to-Bistro program integrates the elements of a local food system—growing, distributing, and consuming—via a degree program where students contribute directly to its viability and vitality.

Students equipped with practical hands-on knowledge of the food system are well-equipped to enter the workforce. Local food systems are becoming an increasingly recognized field and with it a demand for individuals trained in agricultural production, food distribution, and preparation.

Gerry's farm from above.

COMMUNITY COLLEGE INCUBATOR FARM- A PROPOSED VISION

Imagine a call to provide students fresh, healthy local food in Brockton public schools and expand skills-based education for students at the local community college finds an ally: the owner of Gerry's farm. Seeking an alternative to development, the owner and the city have approached local educational institutions for input. Citing a need to access local farmland for emerging urban agriculture classes, an arrangement is reached to gradually incorporate all thirty-five acres of the farm as an operating incubator farm and educational center. Local and state expertise is solicited to develop a strategic plan for the farm; identify institutional clients who would buy produce from the farm; design and build classroom facilities; and develop lessons and classes for students visiting and working on the farm. Residents of local Precinct Planning Units are invited to advise and offer how individual neighborhoods can contribute to the project. All thirty-five acres could be protected by APR.

Following a lengthy planning process a joint-effort between Gerry's Farm, Massasoit Community College, Stonehill College, Brockton High School and the residents of Brockton initiates an initial ten-acre incubator farm and farmer training program. Biology labs are held in the growing fields, Brockton High School students work summers operating a market stand, and elementary classes come to visit a high tunnel that fills with butterflies every spring. Coordinated efforts in Brockton, combined with a need for fresh, healthy food and desire to expand educational opportunities, converge at an educational farm integrating multiple objectives through this urban agriculture vision.

FOOD IN THE CLASSROOM

Imagine parents and teachers are striving to incorporate fresh vegetables and produce in school meals via a farm-to-school program. There is an opportunity to involve students in learning how to grow, cook, and prepare meals as part of efforts to incorporate food in the classroom. Moreover, public school kitchens prepare student lunches from food grown on school property, including produce from educational gardens.

Building on the lessons of the Burlington School Initiative, Brockton public schools can integrate food production with education at school, providing children, parents, and educators with hands-on learning and an outdoor classroom. Students learn by gardening and cooking classes about what a food system is, how it works, and how they are part of it. School gardens can even support after-school activities; high-school students work the gardens during the summertime, selling produce to visiting culinary programs renting school kitchens.

A Brockton middle school educational garden provides produce for the school's cafeteria, hosts a small student-run market stand, and is a place for neighbors, parents, and students to gather and learn.

REVITALIZE INDUSTRIAL SPACES

Photo Source: AeroFarms.com

AEROFARMS, NEWARK, NJ

From AeroFarms:

"AeroFarms is on a mission to transform agriculture...We have been charting a course toward a new standard for totally-controlled agriculture since 2004. We disrupt traditional supply chains by building farms on major distribution routes and near population centers. We defy traditional growing seasons by enabling local farming at commercial scale all-year round. We set a new standard for traceability by managing our greens from seed to package. And we do it all while using 95% less water than field farmed-food and with yields 130 times higher per square foot annually.

Our passion is great tasting food and sharing our harvest with the world. We recently began growing at our ninth farm — the world's largest indoor vertical farm and our new global headquarters in Newark, NJ (pictured). There has been tremendous demand for our locally grown, delicious, produce, and we have farms in development in multiple US states and on four continents. There has never been a greater need for safe, dependable, nutritious food, and we are scaling quickly to transform agriculture around the world." (Aerofarms Website)

Photo Source: Andrew Kilduff

BROOKLYN GRANGE, BROOKLYN & QUEENS, NY

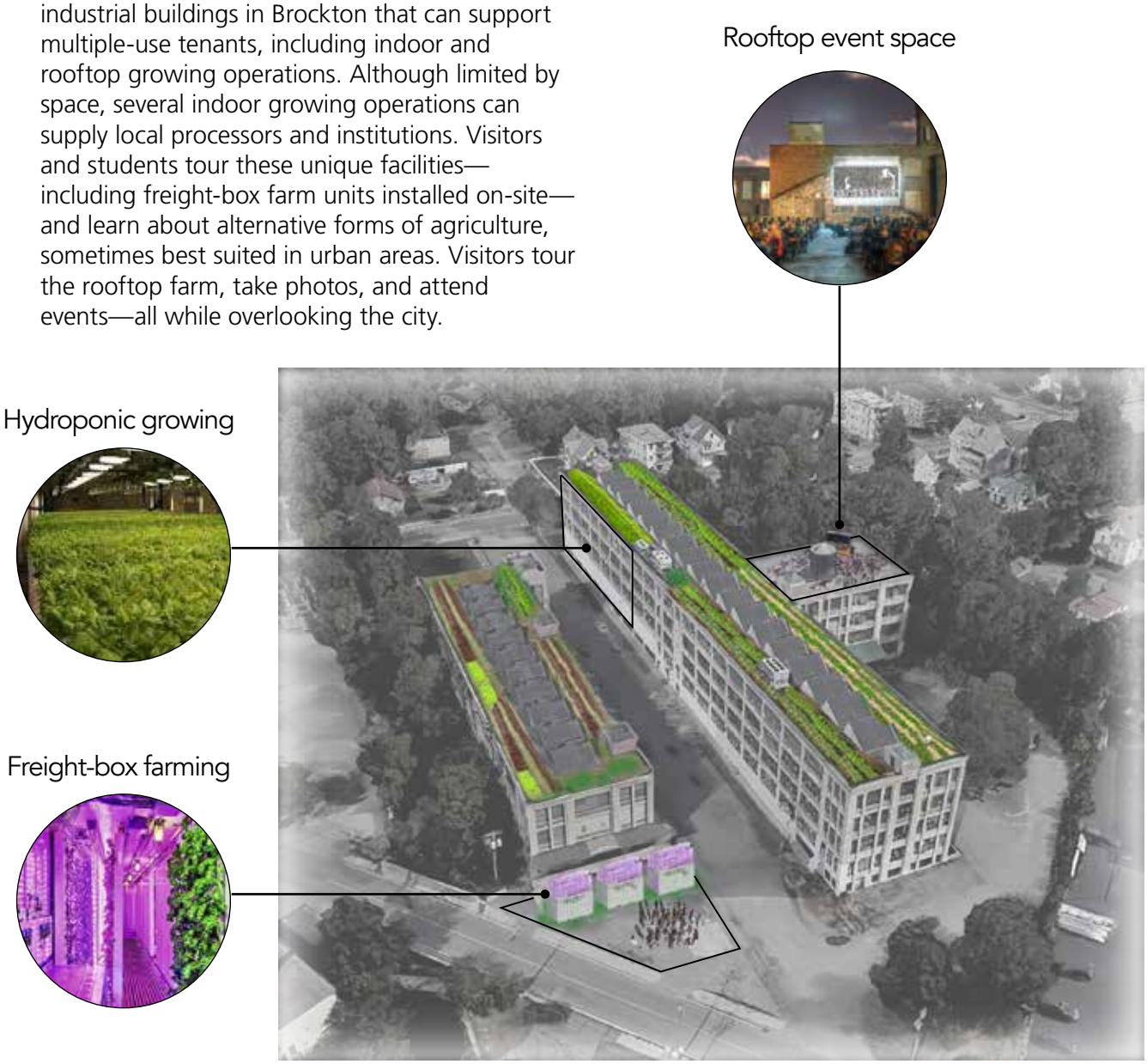
In their own words:

"When we set out to grow food on the rooftops and unused spaces of New York City, our mission was to create a fiscally sustainable model for urban agriculture and to produce healthy, delicious vegetables for our local community while doing the ecosystem a few favors as well. Currently, with over two acres of rooftops under cultivation in Brooklyn and Queens, we've sold over 500,000 pounds of vegetables to restaurants, CSA members and directly to the public via weekly farmstands.

But we've expanded beyond our mission to grow vegetables: we now keep egg-laying hens and have launched a commercial apiary. Our educational non-profit partner, City Growers, has hosted 17,000 NYC youths each season for educational tours and workshops. We've educated countless adults via our workshops on topics ranging from natural fabric dyes to making hot sauce. Our rooftops are constantly abuzz with activity: during the day, we may be harvesting for a restaurant order, or hosting a visiting office group for a corporate retreat; at night we transform into a romantic event space for yoga classes, dinner parties, and wedding ceremonies." (Brooklyn Grange website)

A ROOFTOP OASIS

Imagine three floors of an industrial building in the Campello neighborhood have not seen a tenant in over three decades. A hydroponic start-up needs a larger growing facility for indoor tomatoes and herbs, and a group of young farmers sees an opportunity to capitalize on the structures extensive roof space. As with Aerofarms and Brooklyn Grange, there are industrial buildings in Brockton that can support multiple-use tenants, including indoor and rooftop growing operations. Although limited by space, several indoor growing operations can supply local processors and institutions. Visitors and students tour these unique facilities—including freight-box farm units installed on-site—and learn about alternative forms of agriculture, sometimes best suited in urban areas. Visitors tour the rooftop farm, take photos, and attend events—all while overlooking the city.



A mixed-use industrial building supports a rooftop farm, event space, hydroponic growing start-up, and freight-box farm demonstrators.

REINVIGORATE COMMERCIAL SPACES

Photo source: www.planning.org

(Above) The Grand Rapids Market is a model for mixed-commerical use space with greenhouses on top **(below)**.

(Bottom right) The market hosts twenty-three vendors in its market hall.

THE GRAND RAPIDS MARKET (GRDM)

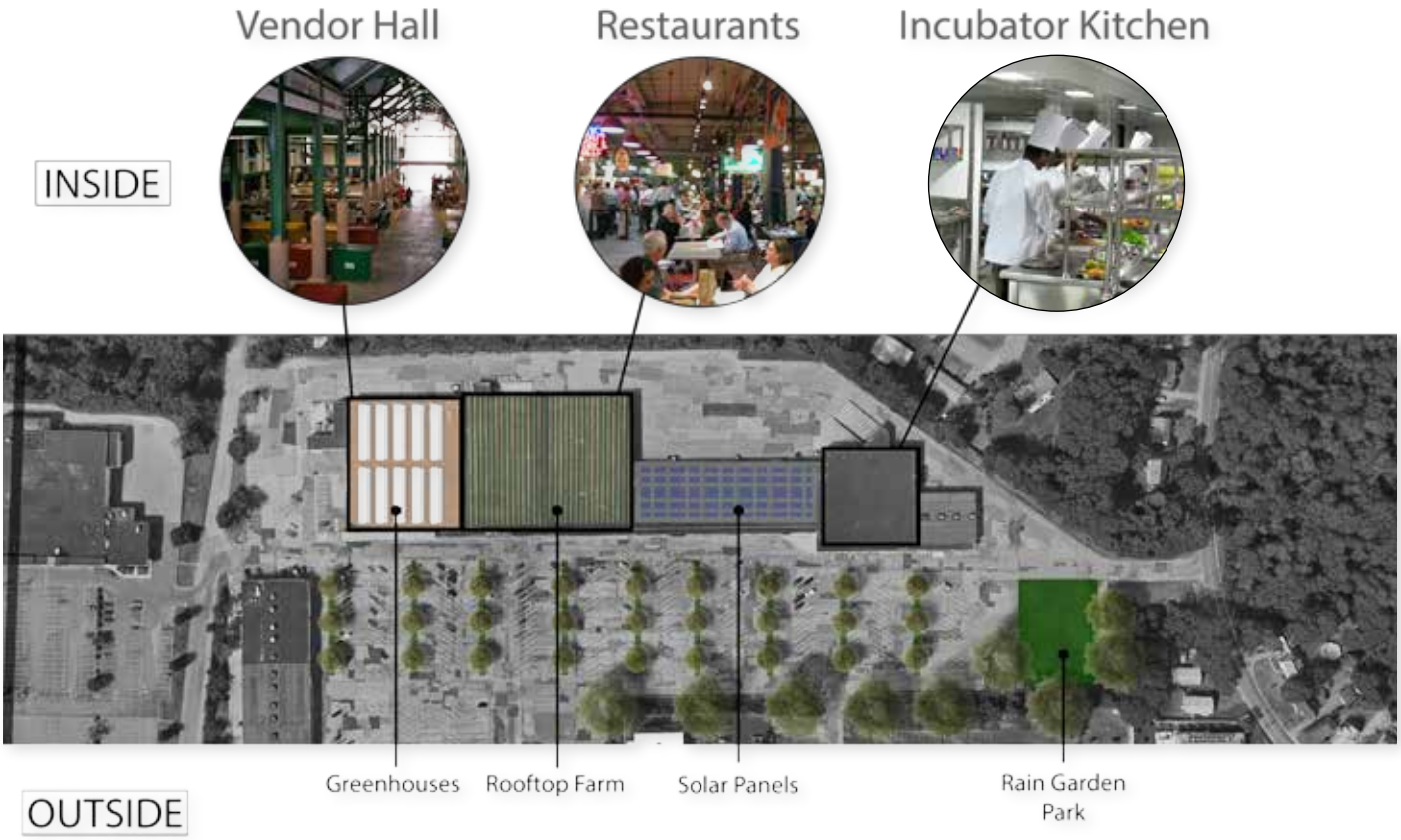
"The Market is LEED Gold certified, features a green roof, live walls, geothermal wells, a rain garden, and plenty of other innovative, sustainable features. The Market is a mixed-use facility that brings together local food production, education, and entrepreneurship opportunities. Our indoor facility features a twenty-three vendor market hall with two full-service restaurants, while dozens of artisans line our outdoor market shed during special events. We offer several exceptional spaces throughout the site, including a rentable incubator kitchen, rooftop greenhouses, and the nation's first kid-friendly demonstration kitchen—you have to see it to believe it." (GRDM Website)

Photo source: Eric Tank

Photo source: www.progressiveae.com

FROM GHOST BOX TO MARKET

In many cases adaptive reuse is preferable to another LEED building (see Grand Rapids example) because of the embodied energy in the building. It can be much more affordable for small businesses to partition and establish in because they are not paying for the costs of a brand new building (source xx). Imagine the Brockton Food Policy Council and Brockton 21st Century group sought to repurpose a vacant big box or strip mall centrally located in Brockton. These buildings are often easily converted for other uses because of existing loading docks, parking, and water, sewer, and electricity connections. Greenhouses could be installed on the roof for maximum solar gain and year-round production. Indoors could become mixed use as seen in the Grand Rapids Market example with vendor hall, restaurants, incubator kitchens, and more.



A commercial space becomes a food distribution hub and hosts cooking classes and demonstrations in a public commissary kitchen.

TRANSFORM VACANT LOTS

Vacant lots can be transformed into productive urban gardens.

SOUTHSIDE COMMUNITY LAND TRUST (SCLT)

Providence, Rhode Island was experiencing many of the same post-industrial urban conditions as Brockton. Following the departure of industry in the 1970s and 1980s, many white middle class residents moved to the suburbs and an influx of immigrants took their place. Tell-tale signs of environmental and economic decline, including foreclosed properties, abandoned mills and factories, and polluted, vacant lots divided the landscape. The multi-ethnic communities sought to create safer streets and reclaim these vacant spaces by growing traditional cultural crops.

The SCLT began in 1981 with neighbors coming together to change the landscape of their neighborhood. They began by acquiring a former chop-shop lot. Immigrants from West Africa and Southeast Asia worked alongside long-time residents to transform this lot into a community garden.

In the next couple of decades, the project grew to include more than 750 gardeners in 47 gardens throughout Providence and it didn't stop there. The SCLT also manage the fifty-acre City Farm property, which has become a community hub for public demonstration of sustainable practices, job training for beginning farmers, and events. With an emphasis on education and preservation of cultural diversity and agricultural landscapes, SCLT began managing the City Farm property after it was purchased by the Rhode Island Division of Agriculture through the State's Open Space Preservation Act.

LESSONS FOR BROCKTON

First, begin with a small, manageable neighborhood project with committed stakeholders. Once the concept is proved and gains interest within the wider city, expanding to other sites and neighborhoods could be explored.

Second, growing food can unite a diverse community. Residents and city officials report that ethnic communities keep largely to themselves in Brockton. The Haitian and Cape Verdean communities continue to be underrepresented in politics and there are few spaces to bring these diverse communities together. However, SCLT demonstrated how neighbors, through a shared mission, can have access to homegrown, healthy, and nutritious food, and come together across barriers of language, nation of origin, and culture.

Third, local neighborhoods can take the lead to manage and restore the urban landscape. In the Brockton of today, retail storefront vacancy downtown and vacant lots, paved and unpaved, are the norm. As a result of limited funding, many public parks are also deteriorating without proper maintenance, which has led to a public safety issue (Land Use Trends). But the SCLT demonstrates that there are potential opportunities for change. Not only was the environment in Providence improved with the reduction of paved surfaces, but it created a sense of ownership and care that can deter crime and create a sense of comfort.

CONVERTING A VACANT LOT DOWNTOWN

Imagine the Brockton Urban Agriculture Coalition assisting community members in the formation of a land trust. As with the Southside Community Land Trust model, they start by identifying and acquiring a vacant parcel with the aid of grant funds and city support. To bring it into cultivation raised beds are constructed in one area, pavement is removed in another area for a small orchard, and a Greenhouse is established to start seedlings and extend the season. To help with expenses they rent part of the space to food trucks or food vendors that then purchase food grown on-site to be sold to customers stopping by to view the gardens and relax. In this example, the lot is across the street from a park, re-invigorating the park and creating safer public spaces for the community.

Once a vacant space adjoining the railroad tracks, now a community space, urban farm, and food-truck outdoor-dining destination.

REPURPOSE PARKS AND OPEN SPACE

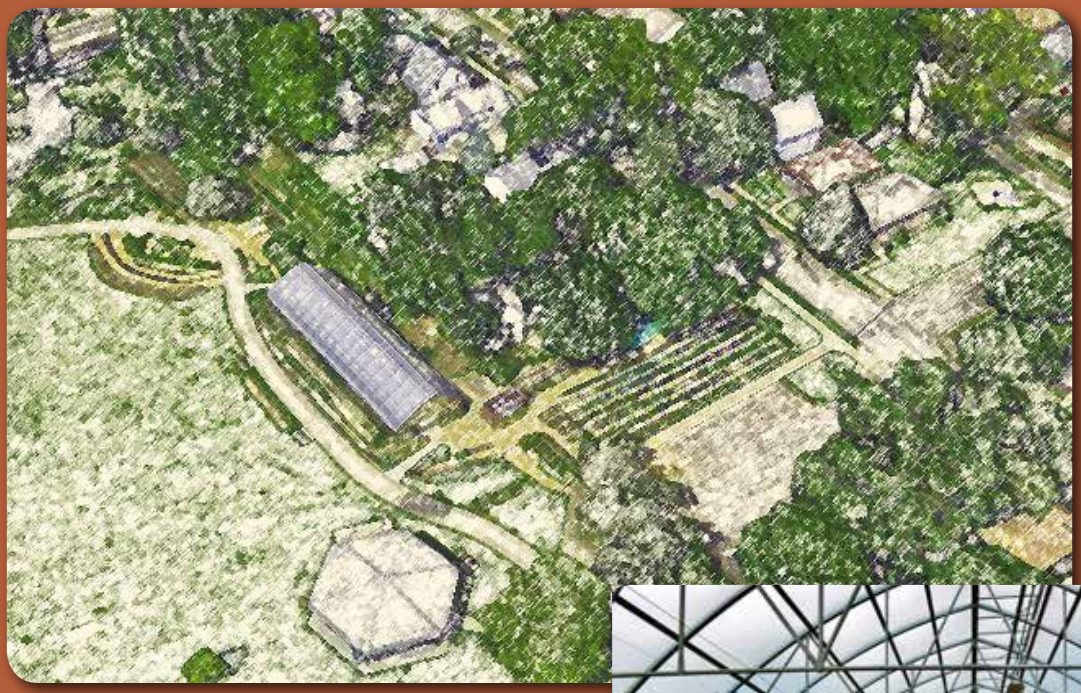


Photo source: ANC

Photo source: ANC

(Above) The Allen Neighborhood Center occupies a part of Hunter Park, and includes raised beds, row-crops, and a greenhouse **(right)**. Source: The ANC

THE ALLEN NEIGHBORHOOD CENTER LANSING, MI

Hunter Park is a thirteen-acre park located in an economically and racially diverse neighborhood on the east side of Lansing, Michigan. The park was rarely used by residents and became a meeting place for gangs and other illicit activities. In conjunction with other neighborhood and governmental organizations, the nonprofit neighborhood organization Allen Neighborhood Center (ANC) began developing a master plan update for Hunter Park in 2004. Over three planning sessions, community members from the Allen neighborhood drafted a ten-point park improvement plan and formed the Friends of Hunter Park to raise funds for and oversee implementation of the plan (Cool Cities). In 2005, the ANC submitted the master plan with a proposal for a greenhouse, garden beds, pavilion, community pool, and improved paths for the Governor's Cool Cities Grant. They were awarded the grant in June of that year and began meetings to prioritize and implement the master plan (Cool Cities).

From this neighborhood planning process, improvements included twenty-four raised beds, a 2,880 square-foot greenhouse, and space for programming to engage the wider community. Revitalization of the park turned the space into a community hub and was followed by neighborhood improvements including reduced crime, children and youth gardening programs, farmers' market, and a CSA farm and pick-up (Community Garden In Parks).

A PARK REBORN

Imagine a Precinct Planning Unit (PPU) in Brockton could use this model to make improvements to one of the many parks in Brockton. The above 5.5 acre Bent Park had been underutilized and deficient in maintenance but was adapted using similar strategies employed by the ANC. By committing to a neighborhood master planning process, the community settled on the inclusion of a greenhouse, raised beds, and a community shelter for events. The PPU is working with Brockton's Promise to create youth and community programming like gardening master classes and a farmers' market on the weekends.

A park in Brockton experiences a resurgence when a neighborhood comes together, cleans up the space, installs garden beds, a greenhouse, and hosts a monthly market with live band and children's activities.

GROWING FOOD AT HOME

Photo Source: Michelle Chistman

The Christman's yard undergoes a major transformation from grassy lawn to productive landscape.

EDIBLE ESTATES MAPLEWOOD, NJ

"We've met more people in the last week than we've met in the past two years because the word is out about our radical project and everyone wants to see it for themselves."

-Michelle Christman, from *Edible Estates*

TRANSFORMING YARDS

Edible Estates is a project founded by Fritz Haeg to transform front yards into productive, educational gardens. These gardens are generally commissioned by local art institutions and developed in partnership with area horticultural and agricultural experts to function as prototypes for their regions (Haeg 56).

In this example a 1,500 square-foot front yard of a well-manicured, split-level home, only twenty-seven minutes from New York City's Penn Station, was transformed into a productive oasis over the course of two days. The property is one of many in a neighborhood landscape dominated by lawns. This 40' x 38' garden space includes fifteen 3' x 3' raised beds with greens, herbs, and nine different vegetables; three grape-producing arbors; five fruit trees; numerous berry bushes; and strawberries along the slopes.

Seeing the transformation, Owner Michelle Christman reflects on the benefits of her garden in an email to Fritz Haeg:

"Our garden has already given us more than I imagined it...,when we watch our son nibble leaf after leaf of cinnamon basil, toss a salad for our parents from just-picked lettuces and herbs…, and brew a pot of fresh mint tea to share with friends who stop by unexpectedly."

LESSONS FOR BROCKTON

A family of three can transform their front yard into a beautiful, functional landscape. Even in a town dominated by conventional ornamental landscapes, edible landscaping can attract positive attention when designed and implemented properly. With transforming a lawn into a productive garden even a family can grow a tremendous variety and amount of produce

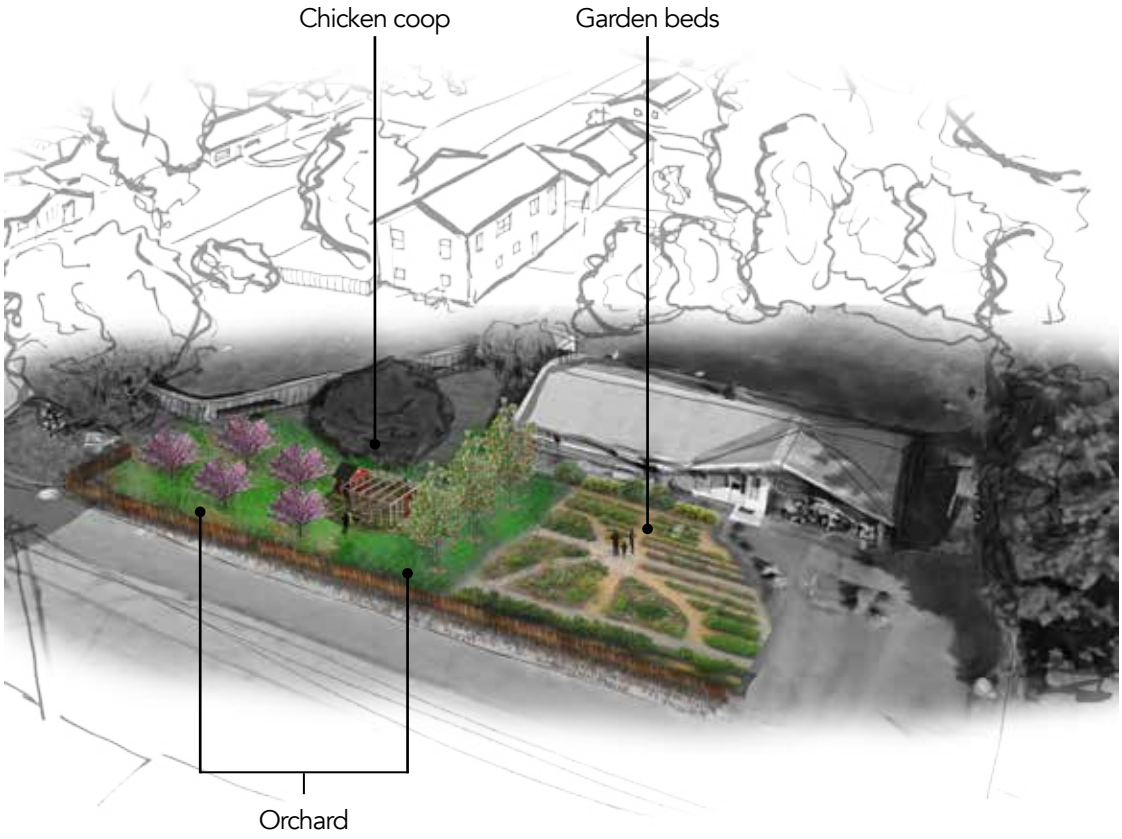
GROWING ON A TRIPLE DECKER

Imagine members of the community attend Precinct Planning Unit (PPU) meetings and have asked the Agriculture Commission (AgCom) to negotiate with the city to allow growing food in front yards. Unlike other neighborhoods in Brockton, this one is comprised of mainly triple-decker and other multi-family homes. Thus backyard space is limited and there are no side yards with adequate sun for growing. Most of the homes are converted to apartments. The City, advised by the PPU, with the support of an AgCom, and guided by an urban agriculture ordinance, recognizes the limited options for growing food and enables residents to grow food in front yards. To increase production, some neighbors have taken it upon themselves to grow food on balconies and in window-box planters.

Balconies, windowboxes, front steps, front- and side-yards—all can be spaces for growing food.

A CAMPANELLI HOMESTEAD

Imagine an iconic Campanelli Ranch transformed much like the Maplewood, NJ residence, with the support of the local Precinct Planning Unit and Urban Agriculture Coalition. The Campanelli brothers returned from World War II in 1945 and soon after developed an inexpensive ranch-style housing model to meet the demand of other returning GIs. They quickly became the dominant force in southeastern Massachusetts house-building and development, building one thousand homes a year by 1956 (Wallace). In this vision, re-zoning for an Urban Agriculture District allows this family to transform their yard into a productive garden and set up a temporary farm stand to sell produce and eggs to neighbors. The yard transformation educates neighbors about the benefits of growing your own food.



A Brockton residence produces vegetables, fruits and nuts, and raises chickens for eggs—all on a quarter of an acre.

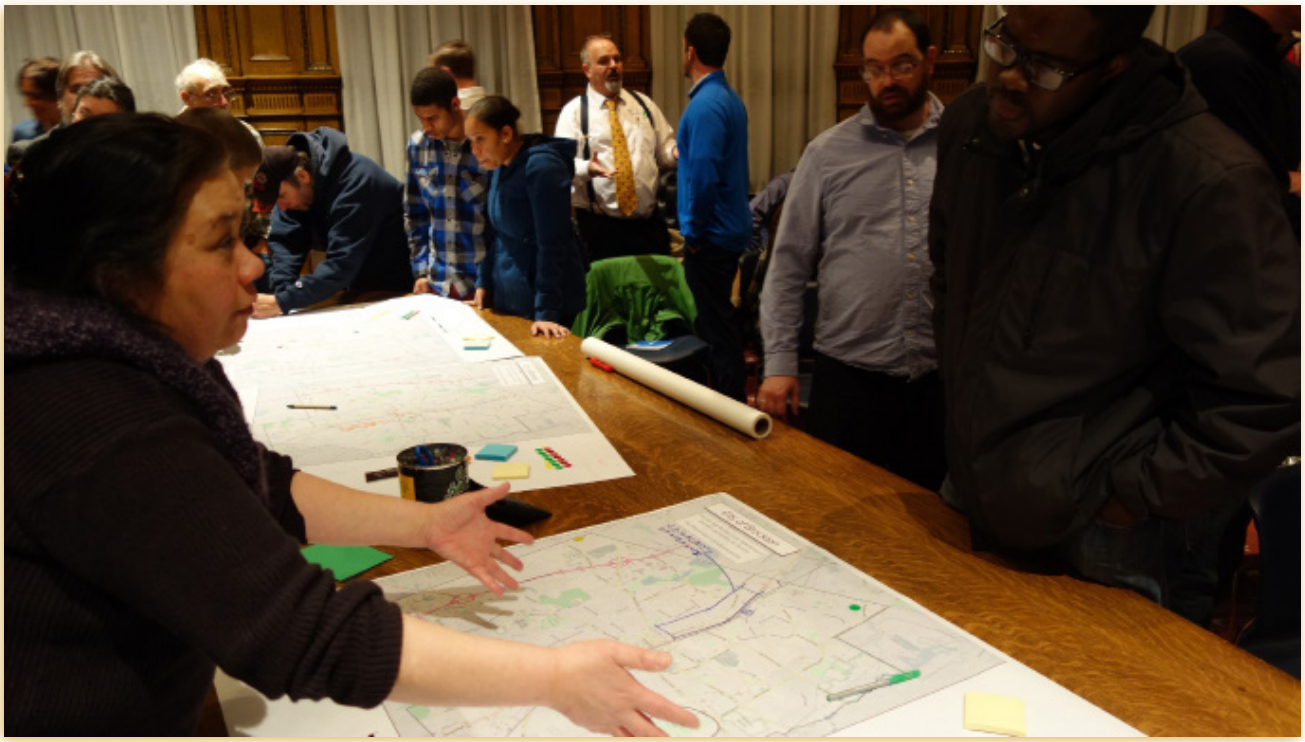


Photo source: Andrew Kilduff

MAKING THE TRANSFORMATION

These transformations are ambitious but well within the reach of Brockton. In each of the case studies that informed these visions for the future there was a significant community, regulatory, and organizational support system in place to assist in making the changes a reality. This suggests that for Brockton to realize its visions for urban agriculture, organizationally coordinated first steps will be required to create an environment favorable for these changes to not only take effect, but to last. Ohio City Farm in Cleveland (See page 27) had the support of Garden District Ordinances, Cuyhoga County, and the City of Cleveland, Baltimore farmers and gardeners (See page 21) had the support of progressive land use ordinances, the Parks Department, the Office of Sustainability, and strong administrative leadership. Brockton can learn from the example of many cities that have come before and maybe even push a little beyond.

RECOMMENDATIONS

SETTING THE STAGE

A TIME FOR ACTION

There are numerous organizations and institutions already working towards food production, food security, community development, and nutrition in Brockton. Efforts to implement urban agriculture in Brockton are of interest to residents, community organizers, and city officials alike. Recommendations to support and enhance these efforts are based on an analysis of some aspects of Brockton's existing food system; inventory and evaluation of parcels and landholdings that might support urban agriculture; and assessment of the potential types, models, and forms of urban agriculture that might be supported in Brockton. The recommendations summarized below are expanded upon in the pages that follow.

Photo Source: Marc Vasconcellos

RECOMMENDATIONS FOR THE COMMUNITY

1. **Establish coordinating councils** for urban agriculture and community planning.
2. **Expand community participation** and increase outreach.
3. **Build on education** by integrating urban agriculture with the Brockton school system.
4. **Protect and conserve land** used for agriculture or that may support agriculture in the future.
5. **Ensure access to land** for urban agriculture enterprises and activities.

1 EXPAND COMMUNITY PARTICIPATION

COMMUNITY IS KEY TO SUCCESS

Community-led initiatives can create the conditions for the successful development of urban agriculture initiatives, projects, and businesses within Brockton. The process of updating the livestock ordinance has galvanized the city. It has gathered attention and energy that can be directed towards other food-related projects.

Response to posts like the one pictured below indicates strong interest in the different ways urban agriculture could develop within Brockton and benefit residents.

The Brockton Urban Agriculture Plan Facebook page.

BUILDING ON WHAT'S HERE

Of the many existing efforts, a few notable examples emerged. Collaborations between the Brockton Community Health Network and Vicente's increased the ability of elderly and mobility impaired residents to access healthy, affordable food; the garden program at Brockton High School regularly donates produce to local food pantries; Brockton's Promise is updating a map of existing gardens and convening coalition-building meetings to lay the foundation for coordinated efforts to improve the food system in Brockton. The Brockton Interfaith Community works to address the lack of representation of Brockton's communities of color in city government and planning decisions, and coordinates efforts through congregations to meet the needs of Brockon's most underserved communities. Groups with funding like the Good Samaritan Medical Center and the Brockton High School science department could be connected with land to expand school gardens and school garden education throughout Brockton.

City government is hindered in its ability to carry through long-term plans given two-year administrative appointments, lack of funding, and understaffing, all of which contribute to a lack of faith in the ability of the government to carry through on its promises. Resident-driven initiatives may be one way to compensate for and improve upon this issue of continuity.

Limited community engagement and representation in local government continues to be an obstacle. Observations from the community meetings indicated a predominantly white municipal government has difficulty including the Cape Verdean and Haitian populations in key decision-making and planning exercises. Building relationships through the school system, which is 80 percent Cape Verdean and Haitian, through religious institutions, and/or through other cultural organizations could help to reach these constituencies and better represent their goals and needs in planning decisions.

WHERE TO BEGIN

Education

Create opportunities for Brockton High School faculty to work with organizations like Brockton's Promise to:

- Create jobs for students and solicit grants for technology and agricultural projects and products.
- Extend maintenance and care of school-gardens during the summer months.

Houses of Worship

- Reach out to faith community leaders to identify the needs and concerns of residents.
- Coordinate food system planning efforts with the Brockton Interfaith Community to reach underserved and underrepresented residents.
- Identify potential avenues for growing and processing food at houses of worship and related institutions.

Farmers' Market

- Develop criteria for a market location.
- Survey the community for suitable market times.
- Get to the root of why market attendance is low; engage the public for insight and feedback.
- Form an advisory group with Vicente's, the Farm at Stonehill, farmers at Gerry's Farm, and others.
- Consider integrating distribution systems, such as a CSA pick-up, in conjunction with or instead of the market.
- Consider vendors who sell ethnically and culturally appropriate foods to accommodate a more diverse audience.

Community Gardens

- Working from the Brockton's Promise map of garden efforts, conduct follow-up surveys and build relationships to increase the capacity of the volunteers and the landscape; include more production growers and community members.
- Identify obstacles preventing others from joining.
- Explore the perceptions communities have regarding the use and upkeep of gardens.
- Ask the community if community gardens are preferable to home gardens, or vice versa.

Recycling Nutrients

- Pursue possible sites to collect, compost, and redistribute composted food waste; this may require multi-disciplinary efforts and investment.

To support the work of these organizations and promote collaboration, four models for creating "coordinating councils" in Brockton are explained next.

2 ESTABLISH COORDINATING COUNCILS

POLICY FOR THE PEOPLE

"Coordinating councils" to help Brockton implement successful urban agriculture can take a number of forms. They typically consist of residents, local officials, advocacy organizations, businesses, and other stakeholders, who work together to implement programs, projects, and policies. This section explores four types of councils:

- Urban Agriculture Coalition
- Urban Agriculture Commission
- Food Policy Council
- Precinct Planning Unit

None of the models are reliant on one another, but could benefit from working together as they help the community attempt to reach its goals for urban agriculture.

WHERE TO BEGIN

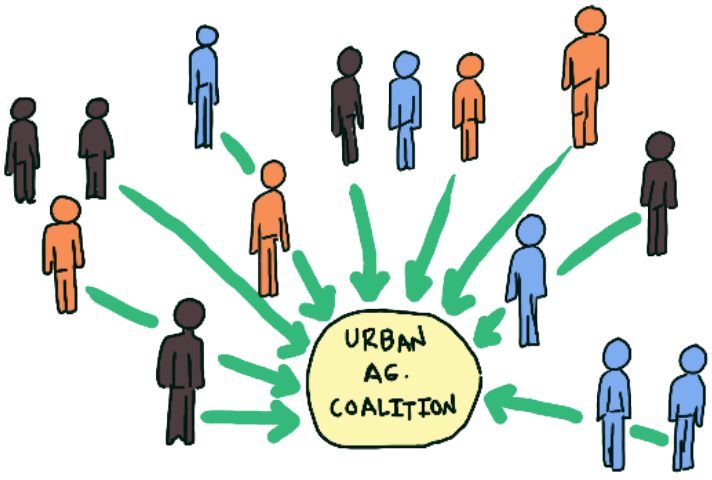
- Research the different models
- Consult coordinating councils in other cities
- Engage with stakeholders to determine the appropriate model

URBAN AGRICULTURE COALITION

Urban agriculture coalitions typically form in response to a conflict like disagreement over the livestock ordinance facing Brockton today. An urban agriculture coalition is not a government committee like the Agricultural Commission or Food Policy Council and it is built on grassroots efforts.

A COALITION IN BROCKTON

There is already a significant amount of energy and motivation in Brockton in anticipation of the pending chicken and livestock ordinance. Gathering around this hot-button issue and developing a platform to communicate with officials and advocate for community interests would be one way to initiate an Urban Agriculture Coalition in Brockton. Following the example of Sacramento (see next page), it doesn't require anything more than active and engaged citizenry with a desire to farm.



Forming an Agriculture Coalition

SACRAMENTO, CA

SACRAMENTO URBAN AGRICULTURE COALITION

In 2012, urban farmers in Sacramento were facing heavy fines and harassment. They not only took their grievances to the city council but also found allies in the community to begin drafting a set of recommendations and best practices for urban agriculture. Their goals were to amend laws that impede urban agriculture, create practical economic opportunities, improve food security, and address the issues posed by vacant lots (Sacbee 2017). Around the same time, city officials working on the Sacramento general plan update invited coalition members to share their ideas and collect community opinion on urban agriculture. Eventually, the coalition shifted gears and began working on an agriculture ordinance for Sacramento.

Members of the community had made it clear that to help lift themselves out of poverty they needed the ability to grow food and to market it on their properties though temporary farm stands (Stott 2014). These efforts and community input led to the passing of a 2015 urban agriculture ordinance that brought a number of benefits, including giving farmers on less than an acre the right to set up temporary farm stands to sell produce (Sactown 2016).

Two months ago, this coalition took an urban agriculture ordinance to the county, enabling farmers throughout Sacramento County to grow and sell crops, keep bees, and raise chickens and ducks (Sacbee 2017). Most recently, the Coalition has collaborated with area non-profits and food advocacy groups to create an interactive online map of urban agriculture efforts in Sacramento.

URBAN AGRICULTURE COMMISSION

One possible pathway to establishing fair regulations in Brockton is to establish an **Agricultural Commission (AgCom)**. Typically, AgComs comprise area farmers, city officials, residents, and others involved in agricultural work locally. AgComs can support and advocate for farmers, farm businesses, and farm interests; work with the city council and city government to resolve farm-related issues; and protect farmland and other natural resources (MDAR). One way they do so is through the passage of the right to farm by law. A right to farm by-law encourages the pursuit of agriculture, promotes agriculture-based economic opportunities, and protects farmlands by allowing agricultural uses and related activities to function by right, thus eliminating the ability of abutters to oppose the activities (RTF Website). Conflict may still exist but the abutters have no legal standing to oppose the activities. Key regulations with ramifications for the future of agriculture in Brockton, like ordinances regulating the raising of animals, are currently up for debate, indicating the potential significance of a coordinated advocacy group to work with city officials and residents.

REGIONAL CONTEXT

Three of the eight towns that border Brockton (Easton, West and East Bridgewater) currently have both a right to farm by-law and an AgCom. These towns are more suburban and have different landscapes than Brockton. With a population of 95,000, Brockton would be the largest city in the state to pass either a right to farm bylaw or to form an Agricultural Commission. As the first to establish an Urban AgCom, the city would need to develop responsible and progressive models and practices for its own governance that could serve as a model for other Massachusetts cities.

AN AGCOM IN BROCKTON

The AgCom membership should reflect the City's diversity. For example, members might represent all seven wards; different types of production growers (animal, vegetable and fruit, community gardeners, home gardeners, and non-traditional agriculture); other aspects of the agricultural system (processors, distributors, marketers); and leaders from local ethnic groups. Advisors from area organizations who can help guide the formation, direction, and initial priorities of the AgCom. The MDAR Handbook for Agricultural Commissions covers the whole process from formation to continuing operations. Some ways an AgCom could positively impact the community include:

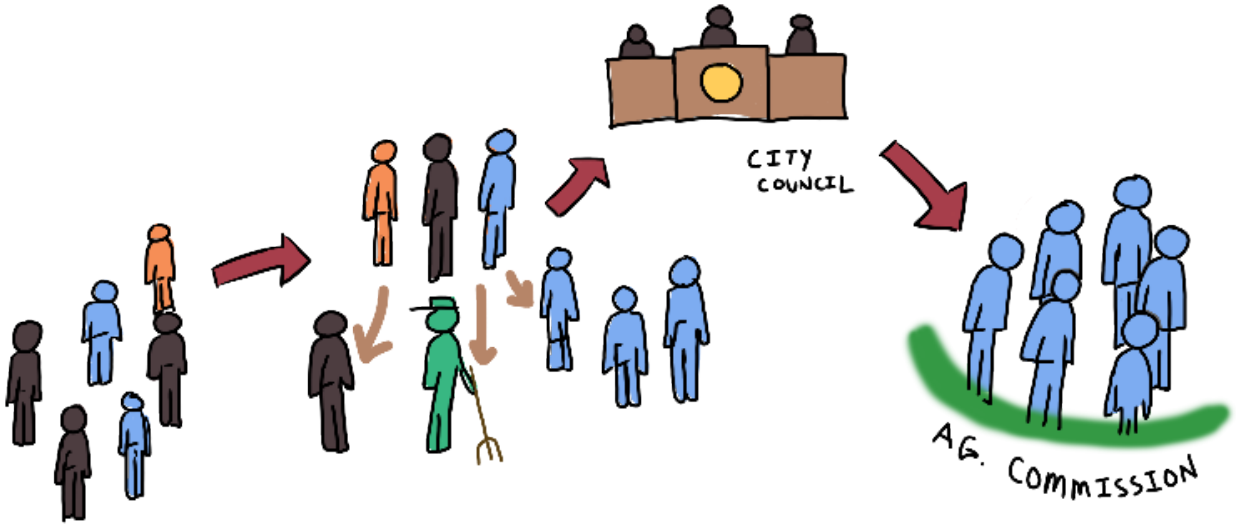
- Initiating a right to farm by-law.
- Preserving the ability to raise urban livestock through guidance of adoption of new land use ordinances.
- Protecting existing farmlands through assembling partners and funding.
- Inventorying available land suitable for all types of urban agriculture, including vacant public/private parcels and commercial and industrial spaces.
- Support integration of farming and gardening into the educational system.
- Developing funding protocols and connections.
- Incubating agricultural enterprises through sponsoring job training and connecting with the MDAR Urban Agriculture Program.

FORMING AN AGCOM

Agricultural Commissions (AgComs) are committees formed at a City Council Meeting through the passage of a local bylaw. The duties of an AgCom are determined by and unique to each town or city (MDAR). AgComs typically form organically in response to a need within the community. The Massachusetts Department of Agricultural Resources (MDAR) outlines steps to forming an AgCom. Below is an abbreviated version.

1. Individuals or groups express an interest in organizing an AgCom and a leader/organizer emerges.
2. Leaders and those interested in creating an AgCom assess the interest in their community by talking to farmers, community decision makers, residents, boards, and committees.
3. Support is gathered from farmers and town leadership for a public exploratory/educational meeting regarding organizing an AgCom.
4. City Council solicits applications for AgCom membership. Often the City Council, the appointing authority, will seek the advice of the AgCom steering committee in the review of applications for membership and requests recommendations on appointments.
5. City Council facilitates the first meeting of the appointed AgCom membership.

These steps are guidelines that do not require strict adherence for success; however, it is important that the process is initiated by community members who gather support before bringing the AgCom to City Council for a vote.



Forming an Agriculture Commission

FOOD POLICY COUNCIL

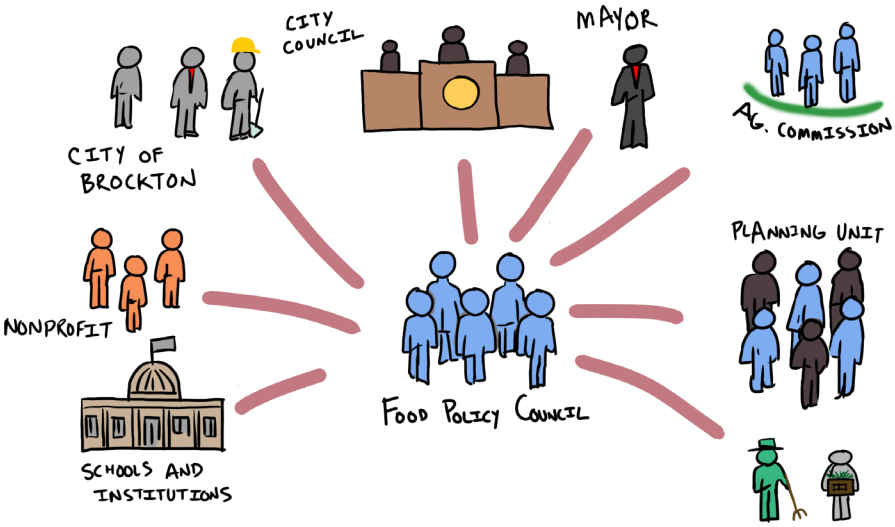
A **Food Policy Council (FPC)** is formed to identify and propose innovative solutions to improve local or state food systems, spurring local economic development and making food systems more environmentally sustainable and socially just (FoodFirst). FPCs have been established by cities all over the commonwealth including Boston, Cambridge, Springfield, and Holyoke (MA Food Policy Council). Operating in the region surrounding Brockton is the Southeastern Massachusetts Food Security Network, which functions as a regional food policy council. An FPC operates in similar ways to an AgCom but has more expansive scope that encompasses the entire food system including agriculture.

A Food Policy Council consists of a group of representatives and stakeholders from many sectors of the food system. Ideally, the councils include participants representing all five sectors of the food system (production, consumption, processing, distribution, and waste recycling). They often include anti-hunger and food justice advocates, educators, nonprofit organizations, concerned citizens, government officials, farmers, grocers, chefs, workers, food processors, and food distributors. Food Policy Councils create an opportunity for discussion and strategy development among these various interests, and create an arena for studying the food system as a whole. Because they are often initiated by government actors, through executive orders, public acts or joint resolutions, Food Policy Councils tend to enjoy a formal relationship with local, city or state officials.

A FOOD POLICY COUNCIL IN BROCKTON

A Food Policy Council can be instrumental in developing and implementing a number of initiatives including:

- Mapping and publicizing local food resources.
- Advocating for new transit routes to connect underserved areas with full-service grocery stores.
- Persuading government agencies to purchase from local farmers.
- Organizing community gardens and farmers' markets.
- Developing guidelines for school nutrition programs.
- Promoting direct marketing opportunities such as institutional purchasing.
- Developing regulatory health and safety requirements for food-based businesses.
- Providing professional development/nutrition education.



Forming a Food Policy Council

NEW HAVEN, CT

The **New Haven Food Policy Council** is a volunteer advisory board for the City of New Haven. Eleven council members are New Haven residents, appointed by the mayor and the Board of Aldermen. They are a collaborative group working to address local and regional food issues and the impacts on individuals, communities, businesses, the environment and local government. Their mission is to build a food system that nourishes all people in a just and sustainable manner.

They improve their food system by:

- Building coalitions and fostering cooperation between community groups, residents, and city offices.
- Developing strategies to effectively address food access, hunger, obesity, community development, economic development, urban agriculture, food waste, and nutrition and food education.
- Compiling information to educate residents and community leaders.
- Advocating for policy that improves the nutritional, environmental, economic, and social health of the City. (New Haven Food Policy Council)

SPRINGFIELD, MA

The **Springfield Food Policy Council** (SFPC) began as a community organizing pilot project called Target Hunger that focused on reducing the number of people experiencing hunger while improving access to nutritious foods (Springfield FPC). In 2009, at a time of increasing food insecurity and hunger, it expanded it's membership into the public-private partnership that is SFPC today (Goonan). Since then, the SFPC has addressed issues related to agriculture through the creation of an Urban Agriculture Subcommittee that deals directly with community gardens and promotes access to locally-grown produce.

PRECINCT PLANNING UNIT

NEIGHBORHOOD PLANNING

Neighborhoods are the critical building blocks of community development. Likewise, neighborhood planning organizations act to strengthen the safety, economic vitality, and well-being of neighborhoods and their residents through planning by and for the residents (American Planning Association). Neighborhood planning organizations can develop a neighborhood plan or strategic vision based on a neighborhood's unique agenda, and may lobby city officials and departments on specific local needs and interests, acting as both advisory councils and advocates for their neighborhoods (City of Cambridge). In some cases they can augment or improve city services through community-based management (see page 91). Neighborhood planning organizations may take the form of voluntary citizen advisory councils that make recommendations to the mayor, city council, and planning department on zoning, land use, development and other planning issues. When organized by precincts, they are often referred to as Precinct Planning Units (PPUs).

Elsewhere, such organizations have helped residents participate actively in city planning decisions; enabled residents to receive information about the functions of city government; and granted residents a forum to express ideas and comment on city plans and proposals while helping cities to develop plans that best meet the needs of their communities (City of Atlanta). They can create opportunities for residents to engage with city government directly and may allow greater input from under-represented minority neighborhoods whose residents are less likely to attend or speak out at city-wide events (American Planning Association). Since residents share in the planning process, and neighborhoods develop their own planning goals, efforts may extend beyond short-term administrative cycles.

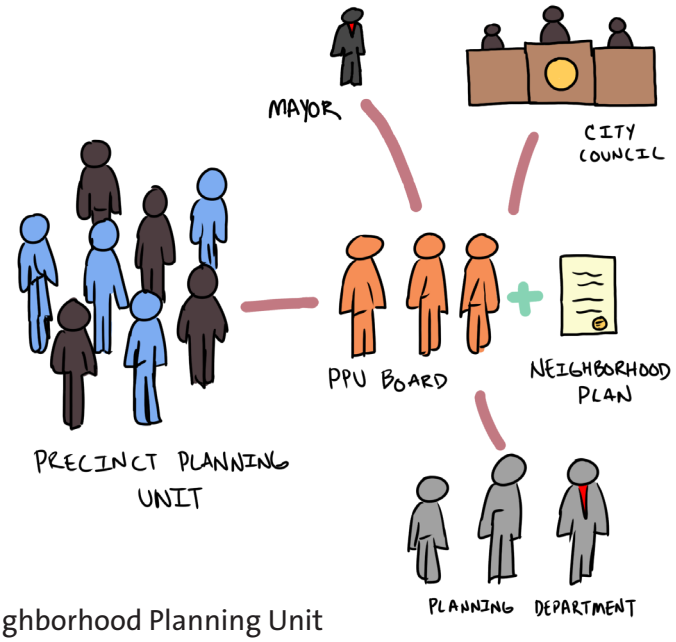
THE CITY'S ROLE

City governments should seek advice from neighborhoods to address local issues concerning public safety, economic development, and public health. According to the American Planning Association, municipal officials should consider the following regarding planning projects and community participation:

- City plans should incorporate neighborhood-level perspectives to guide the City's decision-making and planning process.
- City government should establish city-wide goals and criteria for approving neighborhood plans.
- City government should be encouraged to allocate the resources of the City according to approved neighborhood plans.
- City government should actively solicit neighborhood participation in the overall budget process to truly reflect neighborhood needs and interests.
- Cities need to involve and educate elected and appointed officials, and municipal employees about the significance of neighborhood plans and neighborhood planning processes.
- Effective neighborhood planning requires the municipality to provide regular opportunities to meet with residents and neighborhood planning organizations and discuss neighborhood and citywide goals.

A PROCESS FOR FORMING NEIGHBORHOOD PLANNING UNITS

1. The City establishes appropriate geographic boundaries for its neighborhoods, after consulting with existing neighborhood organizations to determine what boundaries would most accurately represent those communities. (The boundaries of Brockton's 28 precincts were drawn to represent its neighborhoods.)
2. Each neighborhood unit establishes a leadership framework of residents, including, for example, a governing body, Planning Department liaison, City Council liaison, and neighborhood or block representatives.
3. Each unit meets to identify the specific concerns and needs of the community and establish neighborhood priorities and objectives concerning development, land use, zoning, and parks and open spaces.
4. Each unit develops a neighborhood plan based on input from residents and presents it to the municipality.
5. Where possible, neighborhood plans and goals are then:
   - Compared with citywide goals;
   - Recognized by the City as representing the needs and intentions of individual neighborhoods; and
   - Actively included in all citywide planning endeavors that may affect the neighborhood under consideration.



Forming a Neighborhood Planning Unit

ATLANTA, GA

NEIGHBORHOOD PLANNING UNIT 'O'

SEEKING PUBLIC PARTICIPATION

Holbrook Jackson, the first black mayor of Atlanta, GA, sought greater public participation in citywide planning from all citizens, especially Atlanta's African American population. Historically, opinions and concerns from the community were largely disregarded during planning efforts. In an effort to reverse this trend, and improve accountability of city departments on behalf of the public, Mayor Jackson instituted Neighborhood Planning Units (NPU). Each NPU represents and includes one or several Atlanta neighborhoods, and comprises a citizen-appointed board of individuals who live in their respective NPU. NPU citizen boards actively advise the city planning department on current and future plans, community development, and zoning. NPUs provide an outlet for non-NPU neighborhood organizations to share and advise the city on specific neighborhood needs, goals, and concerns.

THE CASE OF NPU-O

Residents of NPU-O, a neighborhood planning unit in eastern Atlanta, recently voted against supporting rezoning for a multi-family development proposed by an outside developer. The developer sought permission from residents to construct a multi-family development of thirty-two homes in the neighborhood of East Lake. In an effort to forge consensus between residents and the developer, members from East Lake and the adjoining Kirkwood neighborhood formed a joint task force to negotiate plan revisions with the developer. In consideration of the NPU-O vote the developer was required to provide an additional redesign that better suited the neighborhood profile and addressed residents' concerns.

LESSONS FOR BROCKTON

Precinct Planning Units can represent the particular needs of residents, and enhance the participation of citizens in citywide and community planning.

Brockton's 28 precincts represent a broad range of interests, ideas, and concerns regarding city planning decisions, many of which occur at a neighborhood or block-by-block basis. Engaging residents through the PPU can improve the city's ability to address concerns, incorporate local knowledge into planning, and improve the efficacy of the planning process.

Neighborhoods can galvanize and forge consensus. PPUs are a potent asset for community representation and provide a forum for residents to have a voice.

COMMUNITY-BASED MANAGEMENT

A CASE FOR PUBLIC INVOLVEMENT

An increased interest in urban agriculture, citywide parks, and open spaces can support urban farms and community gardens. Activities can improve their safety and appearance through increased public activity and "eyes on the street," using marginal spaces within parks not suitable for other recreation, and encouraging small investments from neighboring residents that can, in turn, catalyze larger projects. Limited financial resources and reduced labor has resulted in the deteriorating condition of Brockton's parks and open spaces (OSRP 2013). Residents are concerned regarding the safety and accessibility of these spaces. While the city has been able to make improvements in only a handful of spaces, the majority are clustered within or near the downtown area.

MANAGEMENT BY AND FOR THE COMMUNITY

PPUs would be an integral component of a community-based management effort for city-owned parks and open spaces. Community-based management of city-owned open spaces involves the disbursement of city resources and responsibilities to a neighborhood or community. In the case of city-owned parks and open spaces, these resources may be used for the maintenance and updating of these spaces as well as for approving and coordinating public use of those spaces. Community-based management can include efforts and responsibilities that extend across municipal departments and involve multiple stakeholders (Bovaird 2007). Management goals for parks and open spaces will be determined by the respective PPU. A plan for a park, open space, vacant lot, or brownfield will be consistent with and incorporated into the city's plan. Members of the community may elect to solicit resources such as grants and technical assistance from state, federal, or private organizations or provide their own.

3 BUILD ON EDUCATION

Educational institutions in Brockton are places to focus efforts to establish urban farms and gardens. Boasting an extensive school system and covering a broad array of primary and secondary school subjects, professional skills development programs, and college level education, Brockton's educational network has long been a source of pride.

Education can support urban agriculture by providing outdoor classrooms, engaging students in personal skills development, and exploring traditional subjects including science, math, and home economics. Students can learn about pollinator species biology, develop a business plan for a market garden, and test soils to determine which require remediation. School gardens can also contribute produce to school cafeterias, other institutions, soup kitchens or food banks (NFTS 2017). Brockton's extensive educational system also represents Brockton's diverse communities.

Recommendations to build efforts around agriculture and food in these educational institutions include:

1. A farm-to-school network.
2. A farm-to-institution network.
3. Urban agriculture training programs, including urban incubator farms and food system-related degree and certificate programs

FARM-TO-SCHOOL NETWORK

EXPERIENTIAL LEARNING

Farm-to-school programs seek to strengthen education around the food system, personal nutrition, and food safety. These programs also provide students with fresh, healthy food as breakfast or lunch and for culinary classes (NFTS). Programs may extend to collegiate and adult learners as well. Farm-to-school efforts link growers with a local educational system by:

- Providing local produce and other food to school cafeterias for meals, or to classrooms for culinary programs.
- Educating students, parents, and educators in activities related to agriculture, food, health, and nutrition.
- Engaging students in hands-on learning through school gardens.
- Incorporating nutrition education, food awareness and outreach as part of a school's wellness program.

Through these efforts, children and their families are able to make informed healthy food choices while strengthening the local economy and making sound contributions to their communities (NFTS). School gardens offer educators a tool for applying concepts studied in the classroom.

WHERE TO BEGIN

For developing a farm-to-school program in Brockton Public Schools:

- Reach out to food service director of Brockton Public Schools.
- Initiate dialogue for providing locally-sourced foods in school cafeterias, growing food on school property, and expanding existing efforts around nutrition for students.
- Determine feasibility of incorporating local food awareness and nutrition education into Brockton Public Schools wellness policy.
- Define the necessary training and monitoring requirements for school employees to accommodate a farm-to-school program.
- Identify which children are in most need of food assistance; identify which populations would benefit most from food assistance programs.
- Collaborate with the Food Service Administration of Massachusetts and other Food Service Directors who are developing, or have established, farm-to-school programs.

In determining how public school system resources may contribute to local food production, processing, and education, it is important to consider:

- Identifying which schools possess commercial kitchens and food storage facilities, and which are best suited for expanding or installing new facilities.
- Access to school kitchens during summer months for residents and educators.
- Integrating urban agriculture and food in academic programs at elementary, middle and high school levels. Curriculum topics may include:
  - Food system education
  - Nutrition and human health
  - Agriculture production techniques
  - Culinary arts
- Promoting summer programs for high school students engaging in urban agriculture within and outside Brockton; emphasize programs that engage the community, such as:
  - BAWIB YouthWorks
  - Massachusetts Envirothon
  - Summer gardening programs
- Encourage active agricultural enterprises in Brockton, including Gerry's Farm and Packard Farm, to hire high school students during summer months.

PENDING LEGISLATION

Statewide efforts are underway to improve access to fresh, local foods in classrooms, address food access issues by strengthening connections between schools and institutions, and providing classrooms with updated kitchen and cooking facilities. Three proposed state senate bills may provide opportunities to integrate local food efforts into classrooms and institutions, providing a bridge between local growers and processors and institutional consumers. Supporting and implementing legislative measures to enhance farm-to-school and farm-to-institution efforts can advance the goals of these programs in Brockton. (See Appendix E)

BURLINGTON, VT

BURLINGTON SCHOOL FOOD PROJECT

A NEED FOR HEALTHY FOOD

Citing a need to address food insecurity and nutrition for low-income students in schools, the city of Burlington, Vermont, collaborated with the Burlington School District (BSD), food service providers, businesses, community organizations, and farmers to found the Burlington School Food Project. Primary goals of the project were to increase awareness and engagement among students and educators in the local food system; implement a food action plan to increase use of foods from local producers; and enhance the connections between private and community organizations and build capacity towards better meeting the nutritional needs of low-income Burlington students (BSFP). An emphasis on purchasing local produce and products was of particular importance, given the presence of small farms within and just outside the city's limits.

A COLLABORATIVE EFFORT

Integrating food into the classroom and cafeteria is an ongoing process for the Food Project. The grant-funded organization successfully moved to integrate food education as part of the student curriculum, developing activities centered around school gardens and local farms, including nutrition programs and cooking classes. Purchases from local farms increased annually from the project's beginning; by 2014 the BSD had purchased $225,379 worth of produce, meat, poultry, dairy, and value-added products—most from farms and distributors within a thirty-mile radius of Burlington, and throughout New England (BSFP).

Collaboration between food-service providers, the BSD, and farmers led to greater integration of food from local farms into school cafeterias, including allowing access to the high school kitchen to process raw foods; developing produce-supplier contract with farmers; and active volunteer involvement from students. The Burlington Food Council played an active role in sponsoring the Food Project as well as assisting with networking among organizations and individuals addressing food security and access.

As of 2017 the Food Project's mission remains focused on childhood nutrition, and has expanded efforts to promote and consult farm-to-school programming both regionally and nationally. Core considerations for developing a farm-to-school network have emerged after fifteen-years of operations—representing families of students who need food most, identifying and accommodating the regulatory hurdles around providing food to students, and providing steps for other school districts to adopt in developing their own farm-to-school networks (Davis 2017).

LESSONS FOR BROCKTON

The Burlington School Food Project demonstrates how a collaborative effort can bring food into the classroom, address food insecurity, and improve the viability of local farms.

A successful farm-to-school program is built on collaboration. Input from students, parents, and teachers is just as valuable as expertise from school administrators, a food policy council, food-service providers, farmers, and community organizations invested in these goals.

While there are few farms and producers within Brockton, schools can build supplier relationships with farms in neighboring communities and the region. Integrating local distributors and growers serves to boost the viability of those operations.

Initiating a farm-to-school program in Brockton is not limited to purchasing local foods for schools. Efforts to promote awareness and education around local food issues can include nutrition programs, field trips, cooking classes, and volunteering opportunities as well as school gardens.

FARM-TO-INSTITUTION

Farm-to-institution efforts connect local food to institutions other than schools—hospitals, food pantries, and nursing homes—engaging participation in the larger food system. Farm-to-institution requires a cooperative effort among various stakeholders, including farms, food-service professionals, producers, food distributors, community members, administrative and government staff, city and county health officials and others (ATTRA). Efforts to establish a farm-to-institution network may touch upon all aspects of the food system, including food production, distribution, procurement, food preparation, consumption. Knowing where there is support for these initiatives and a need for healthy local food indicates where efforts may be most successful.

Farm-to-institution supports a system of education by which consumers can learn about a food product at the point of service or place of purchase. Improving consumer education about food sourcing encourages healthy food choices, and purchasing from local growers and suppliers (UFI). Producers, distributors, and consumers (purchasers) may all struggle with how to keep the costs of local foods down, and consumers and distributors need to have sufficient and reliably available produce. Establishing robust links between local growers and consumers serves to stabilize the price of local foods; for growers selling locally is more equitable and for consumers prices are more affordable (UFI). Issues and concerns about food safety, availability, and affordability, and food education and marketing can be monitored or addressed by an external organization, for example a food policy council. As a whole, farm-to-institution offers the most direct means of sourcing local foods for institutional clients and their consumers.

IN BROCKTON

In Brockton, senior assisted living centers, the hospitals, and Massasoit Community College are all potential institutional consumers of locally grown or sourced food. It is unlikely urban farms within Brockton will be able to provide adequate volume of food products for these clients; therefore, there is potential for Brockton's institutions to engage the regional food system by sourcing from farms in adjoining communities and throughout southeastern Massachusetts. Brockton's existing food processing enterprises indicate potential for Brockton to serve as a regional hub of suppliers of food goods to institutions outside the city as well.

WHERE TO BEGIN

- Initiate discussions with institutional clients in Brockton to source locally grown and processed food.
- Discuss with food service providers establishing protocols for integrating locally grown foods into cafeterias, food services, and prepared meals.
- Rank purchasing decisions of institutions that support procurement from local farms; prioritize ones that support farms within a predetermined sourcing radius.
- Identify potential gaps in the local distribution system that may prevent local growers in Brockton from sourcing to local institutions.
- Establish a coordinating council to link local growers with institutional clients in the city.
- Develop an institutional framework for a community food hub, or network of food hubs in the city.
- Coordinate farm-to-institution and farm-to-school policy efforts with the food policy council and organizations and individuals invested in food systems efforts.

URBAN AGRICULTURE TRAINING PROGRAMS

TRAINING FARMERS

Urban incubator farms engage college students and adult learners in practices related to agriculture. Small business development and planning, agricultural marketing and sales, community outreach, and environmental science are potential areas of education and can be explored as part of a functioning agricultural enterprise (Intervale, World Farmers). A growing urban farming network requires trained and skilled farmers and farm educators within the city; local urban farm trainees are best-suited to meet the challenges of farming within an urban context, and are likely to work with and participate in community functions.

Incubator farms can provide additional recreational opportunities for residents of all ages through community gardening; can provide increased habitat for wildlife, including pollinator species; and can bring together businesses, communities, and city government through public events and sponsored programs. Incubator farms are also places where the public can lean about urban farming and the challenges urban farmers face. They give the public an opportunity to engage with the productive element of the food system, and provide working examples of emerging urban farming strategies and best management practices (Johns Hopkins).

EXTENDING LEARNING

The City of Brockton, community, and non-profit organizations sponsor youth and adult learning programs. The Brockton Area Workforce Investment Board (BAWIB) offers high school students opportunities to engage in entrepreneurial and summer work programs through YouthWorks (BAWIB). Wildlands Trust supports high school education and sponsors the Massachusetts Envirothon; this year's students are testing soils at Brockton properties for contaminants (Calderara 2017). However, a lack of collaboration among these efforts has resulted in isolated achievements. Given growing interest in these programs, in particular among high school students, urban agriculture can provide additional resources for job training, extracurricular activities, and continuing education.

WHERE TO BEGIN:

- Initiate discussion between The Farm at Stonehill and Massasoit Community College for establishing an incubator farm in Brockton.
- Identify potential avenues for integrating urban agriculture into food-systems related degree programs at MCC, including the culinary arts program.
- Begin discussion with Gerry's Farm and Packard Farm about incubator farms and/or an urban farmer training program.
- Identify opportunities with community organizations, including BAWIB and Brockton's Promise, to embed farmer training and education at current sites.
- Develop an educational framework for adult education programs on food system topics such as:

    Food system education

    Agricultural production

    Nutrition and human health

(See TC3 case study for example of a community college food systems degree program.)

CHICAGO, IL

GROWING HOME

IN SEARCH OF OPPORTUNITY

Les Brown began conjuring a revolutionary concept in the early nineties, well before the national interest in local foods and urban agriculture took hold. He envisioned urban farms where homeless Chicagoans are paid and provided on-site job training growing healthy, fresh food across a sea of vacant lots. Chicago suffered from high unemployment, urban blight, and neighborhood crime rates far exceeding the national average. The disenfranchised African American community was particularly vulnerable to these trends. A need arose to retrain and reintegrate these individuals into the job market (Growing Home).

TRANSFORMING LIVES THROUGH JOB TRAINING

In 2002, the first urban farm and training program was established; nine members of the community participated by growing and selling food at area markets. By 2015 Growing Home was producing over 30,000 pounds of produce on .82 acres at its Englewood urban farm site. Thirty-nine individuals enrolled in its job training program and classes in computer skills, resume building, hospitality, and food service training (Growing Home). Growing Home's mission focuses on providing a road for disadvantaged individuals to secure long-term employment. Farm members advised the City of Chicago on drafting ordinances reducing obstacles for establishing urban farms (COB). Growing Home's farms are the first and only USDA certified organic farms in the city.

Growing Home demonstrates how efforts to train and integrate individuals into the job market improve lives.

It is possible to provide critical job-training services through urban farms and related job-training programs. Farm operators learn skills and gain proficiency in multiple arenas, including business planning and management, food safety, and marketing, skills that can be transferred to other jobs.

It is possible to help individuals who face considerable barriers to employment. Brockton's unemployment rate remains higher than that of surrounding communities and the state. Farm training programs can provide job opportunities for those who struggle with securing long-term employment, including individuals with criminal records and individuals suffering from drug abuse and/or homelessness.

It is possible for graduates of training programs to establish farms of their own or train new members. There are several efforts underway to train and prepare Brockton residents of all ages for job placement. A growing interest and awareness of local food systems may signal additional opportunities in growing, processing, and distributing of local foods. Given Brockton's extensive educational network, Brockton can excel not only in producing and processing local food but also in teaching those who grow it.

4 ENSURE ACCESS TO LAND

LAND IS AVAILABLE

The City of Brockton owns many vacant parcels, open space, and parkland that can be made available to the community through a number of avenues. The city would benefit from regular and legally permitted use of previously vacant or under-used spaces through improved aesthetics, "eyes on the street" that can increase safety, and greater interaction between community members that can contribute to the development of a community identity and further neighborhood investment. The city can support these efforts through land use zoning ordinances and regulations that make it easier for farmers and community members to initiate on-the-ground action. The city can also provide educational support, up-front capital investment, and subsidies that help reduce the financial burden on farmers.

DEVELOPING A FRAMEWORK FOR LAND ACCESS

Creating a legal framework to ensure access to land for urban farmers is one way to stimulate community engagement, reinvestment in public spaces, and local food production. A farmer who believes she has only temporary access is much less motivated to invest in the land's improvement than one who has indefinite access. It is the difference between personally investing in infrastructure development, in the long-term health and productivity of the land, in the health and engagement of the surrounding community, and being concerned only with short-term productivity and gains.

Ensuring land tenure means legally guaranteeing that farmers have access to land in Brockton that they can invest in without fear of losing access or rights. (See Baltimore case study page 21)

ACCESS TO LAND: WHERE TO BEGIN

1. Establish a process for community members to identify a vacancy in their neighborhood and organize a farm or community garden. Identify requirements for:
   - Access to municipal water
   - Soil testing and amendments
   - Potential market outlets

2. Develop a framework for the city planning department to provide information to community members seeking vacant parcels for urban agriculture.
   - Publish and manage database of all available vacant parcels
   - Maintain up-to-date information
   - Provide current status for each parcel, including:
     - Size
     - Ownership
     - Soil tests (if applicable)
     - Water access (if applicable)

3. Identify and examine suitability of commercial and industrial spaces for non-traditional agriculture.

4. Set legal precedent/structure for ensuring continued access of city-owned parcels where urban agriculture takes place, including a moratorium on development for certain parcels if necessary.

5. Create legal pathways for farming in parks and open spaces.

5 PROTECT AND CONSERVE LAND

Due to Brockton's industrial land-use history and over-development, open spaces for agricultural production are limited. Preserving existing and potential open spaces secures potential land for future urban farmers, supports wildlife, especially threatened species, and provides the public with scenic or recreational opportunities.

Efforts to preserve and protect agricultural land and open spaces in Brockton are ongoing. However, because no criteria is in place for urban agriculture, land suitable for this purpose has not been identified. Because open space, parkland, and existing farmland may be suitable for urban agriculture, there are measures the City, state, and local organizations can take to ensure it remains protected as agricultural land or open space and a potential resource for urban farmers and gardeners. These measures include:

- Agriculture Preservation Restrictions
- Chapter 61A
- Chapter 61B
- Municipal Conservation Fund

LAND CONSERVATION TOOLBOX

AGRICULTURAL PRESERVATION RESTRICTIONS (APR)

APRs protect land from permanent development. An APR is a voluntary option for farm owners to implement a permanent deed restriction on a farm property on land with soils deemed "prime" or of "statewide importance" (MDAR). This deed restriction precludes future development or any other use that would have detrimental effects on its agricultural viability. The Massachusetts Department of Agricultural Resources (MDAR) approves APRs and pays farmers the difference between "fair market value" and "agricultural" value (MDAR). An APR provides several tangential benefits including financial relief by releasing equity "locked up" in land values, enabling emerging or beginning farmers to purchase productive land, providing retiring farmers with an option to transition land between owners without surrendering land to development, and providing productive land for non-profits such as land trusts or educational centers (MDAR).

To be eligible for an APR, a farm must:

- Have a minimum of five contiguous acres in production.
- Have been actively devoted to agricultural production for the two immediately preceding years.
- Have gross annual sales of more than $500 dollars (MDAR).

Currently in Brockton no properties are protected via Agricultural Preservation Restrictions (OSRP). Several agricultural and open space properties in Brockton rest atop soils of both "prime farmland" and "farmland of statewide importance," including all thirty-five acres of Gerry's Farm (OSRP). However, most prime farmland within the city is developed for uses other than agriculture. Limited availability of prime farmland reinforces the importance of preserving these lands for agricultural use.

CHAPTER 61A AGRICULTURAL LAND

Chapter 61A is a voluntary tax use program that provides farmland owners with an opportunity to reduce their property taxes by keeping a portion of their land in agricultural or horticultural production. Chapter 61A requires that farmland must:

- Have a minimum of five contiguous acres in production.
- Have been in production for two years or more, including fruits, vegetables, ornamental shrubs, timber, animals or maple syrup.
- Have gross annual sales of more than $500 dollars (UMASS).

Chapter 61A does not protect land from permanent development. If landowners choose to sell the land or change its use within a specified time period they may be penalized through rollback and conveyance taxes. Should a landowner choose to sell the land for another use or development the municipality has right of first refusal, or ability to purchase the land at market rate.

Notice of sale activates:

- A 120-day period wherein the municipality must exercise its right to refusal.
- A 90-day period wherein the municipality must purchase the property once it exercises right of first refusal.
- An option for the municipality to transfer the right of first refusal option to an eligible conservation organization, non-profit, or state agency.

As of 2013 there are sixteen parcels in Brockton under 61A, including six that make up the thirty-five acres of Gerry's Farm. Per the 2013 OSRP, the Conservation Commission has not identified additional parcels eligible for 61A (OSRP).

Incorporating urban agriculture in Brockton may enable parcels, both public and private, to be eligible for 61A in the future. It is an important consideration for emerging urban farmers who lack financial resources and farms that may shift ownership more quickly. Chapter 61A is an additional step the City can take to ensure land access for urban agriculture.

CHAPTER 61B OPEN SPACE AND RECREATION

Chapter 61B is a voluntary tax use program that provides landowners an opportunity to reduce their property taxes by 75 percent of the property's assessed value in exchange for keeping some or all of their land undeveloped for a specified period of time. This excludes existing structures or land used or in connection with those structures. Owners who elect to adopt 61B provide the community with public benefits, including access to open space for passive and/or active recreation, wildlife habitat, and local food and wood products (UMASS). Chapter 61B requires that the property must:

- Be no less than five acres.
- Be left mostly wild, natural, or open.
- Be made available for public or private use and support passive or active recreational uses, so long as they do not interfere with the environmental benefits of the land (UMASS).

Chapter 61B does not protect land from permanent development. Additionally, 61B does not require open space to be currently managed, preserved, or intentionally landscaped. Brockton's public parks and open spaces under 61B are distributed throughout the city; the largest is D.W. Field. There are no known private properties under 61B in Brockton. Land that supports recreational use could potentially support urban agriculture, including public community gardening and farming—activities that contribute to public good and provide local food products—and for land owners who may farm on part or all of their property. It is feasible for these activities to take place on existing and future parkland and open space under Chapter 61B.

MUNICIPAL CONSERVATION FUND

A Municipal Conservation Fund (MCF) is a voluntary fund established by a municipality and comprises roll-back and conveyance taxes from lands acquired or released from Chapter 61 status, as well as fees and funds from permitting. Funds may also be sourced from state and federal grants, land trusts, or private donors. These funds may be used only for conservation purposes, including management of conservation land, parks and open spaces; purchasing land from public or private owners for conservation; or improving facilities within or that support conservation land. They are kept separate from other municipal or enterprise accounts (Mt. Grace LT). The Conservation Commission can use MCF resources to ensure the longevity, upkeep, and continued availability of conservation land for public use and enjoyment, and potentially for urban agriculture. In establishing and MCF it is recommended the Conservation Commission and city consider:

- Identifying an organization to administer the fund that includes members from land trusts operating within the city, neighborhood planning councils, the Parks Commission, Conservation Commission, and other relevant organizations.
- Determining which state, federal, and private grants and funds are best suited to leverage for maximum benefit.
- Establishing if the organization overseeing the MCF is responsible for leveraging these funds or enforcing permitting fees.

PENDING LEGISLATION PROMOTING URBAN AGRICULTURE

Throughout Massachusetts an expanding interest in establishing farms and agricultural enterprises in urban settings has drawn support from a multitude of residents, community organizations, and city and state agencies. Unlike traditional farmland, urban farms do not support large commercial operations. They are often established in unconventional settings such as reclaimed lots, vacant parcels, and parks, and fall well below the five-acre qualifying minimum for Chapter 61A assessment. Currently, state legislation concerning agricultural enterprises does not explicitly address the difference in scale and production capacity of urban farms and does not identify urban farmers as agricultural practitioners. There are no provisions to address the need to protect and preserve small urban farms and community gardens, especially in urban settings where development pressure is highest.

As of March 2017 there are two bills pending in the state legislature concerning urban agriculture and protecting small farms (see Bill No. 1532 below, and Appendix F). They have potential to promote urban agriculture while mitigating pressure from development and reducing financial burdens facing farm owners, urban farms, and community gardens. This is significant for Brockton since the majority of agricultural operations in urban areas are small, occupy multiple, non-contiguous parcels, and are at greater risk of development than their rural counterparts.

SN: 2030, HB: 3673 BILL NO. 1532
"ACT TO PROMOTE URBAN AGRICULTURE AND HORTICULTURE"

Chapter 61A states that owners of farmland eligible for tax assessment restrictions must meet a five-acre minimum of contiguous land in agricultural production. Bill No. 1532 provides an amendment to Chapter 61A, wherein:

1. The area or portion of a parcel in agricultural protection be more than one-tenth acre but less than two acres.
2. It may apply to only the portion of the lot that is in protection.
3. Shall take effect in a city or town whose population exceeds 50,000 upon acceptance.
4. The city shall thereafter be able to modify the area exempt from taxation.

Most agricultural operations in Brockton, both current and future, fall within the one-tenth acre provision of the bill. This legislation can enable a variety of urban agricultural enterprises to qualify for agricultural tax assessment; qualify for measures to protect farmland from development; and establish and grow—many of which can take place in Brockton.

LAND PROTECTION: WHERE TO BEGIN

IMMEDIATE ACTION
PROTECT GERRY'S FARM

- Initiate a discussion with the owner(s) of Gerry's Farm regarding the protection of all thirty-five acres under an Agricultural Preservation Restriction.
- If an APR is deemed appropriate by the owner(s), expedite resources necessary to enact the deed restrictions.
- Engage in local business awareness and support programs to direct new consumers to Gerry's Farm, especially the farm's market stand and city-run farmer's market.
- Initiate discussions for establishing sales contracts and educational visits between Gerry's and Brockton Public Schools; coordinate efforts with a newly formed food policy council.
- Implement a city-wide awareness of agriculture and food systems awareness with Gerry's as the focal point.

SHORT-TERM MUNICIPAL ACTION
CATALOG AND PRESERVE LAND

- Identify all existing protected, non-protected and potential open spaces and parcels within Brockton; highlight parcels that have soils classified as prime farmland or of statewide importance for agriculture.
- Identify parcels eligible for APR, 61A, and 61B; establish inventory of future parcels that may qualify.
- Locate all city-owned and private parcels that may support community gardens, urban farms, and agricultural enterprises.
- Evaluate these parcels against conservation goals; identify areas of potential conflict or opportunity.
- Coordinate land protection efforts between the Conservation Commission, land trusts, private landowners, citizen-action groups, and the Commonwealth.
- Make all information regarding the sale or exchange and management of protected land available to the public.

LONG-TERM MUNICIPAL ACTION
BUILD NEIGHBORHOOD PLANNING

- Establish a Municipal Conservation Fund for management and improvement of parks and open-space.
- Sanction Precinct Planning Units to represent all neighborhoods in the city and to advise the city government regarding matters concerning parks and open space, land conservation, and agricultural land protection in each precinct.
- Direct urban farmers seeking land to establish agricultural enterprises on parcels that are identified as eligible for Chapter 61A assessment.

FUTURE PLANNING INITIATIVES
SUPPORT URBAN FARMING

- Develop policy for procurement and establishment of land used for urban agriculture.
- Establish protocols for new farmers establishing tenure and requiring agricultural land protection.
- Support legislation specifically for urban agriculture and food systems.

CONCLUDING VISION

Situated between an ever-expanding Boston metropolitan region and Providence, Brockton has the potential to serve as a critical node for regional food security, processing, and distribution.

Brockton—the sprawling, populous urban center, surrounded by suburban and semi-rural economies that are equally dedicated to the future of agriculture in Massachusetts—has the ability to offer the region something unique: it has the location, the infrastructure, the population, the diversity, and the growing determination to embrace its position in a new century of disruptive, global, and urban economics. Today, exploratory technologies are making farms a possibility in shipping containers, old industrial buildings, and rooftops, ushering in a new era in food systems research and development. Brockton has the opportunity to bring together the traditional rural and suburban farming economies with the new urban agricultural economies.

The challenge Brockton faces is how to meaningfully and actively incorporate communities that have been without proper representation in government positions or in decision and policy making. This engagement starts in educational institutions, like Brockton High School, that engender pride in Brockton's potential; this starts in the community and faith centers where communities are already gathering and celebrating; in the public spaces and historic parks that have become overgrown or overlooked; in front yards and backyards; in city government and in the community; in the vacant lots and the vacant buildings that, until now, stood as markers of a bygone affluence and could serve as beacons for a hopeful and prosperous future.

Urban agriculture offers a set of models that communities are employing when facing the big questions and realities of today: climate change, environmental degradation, the end of non-renewable energy, rapidly expanding urban centers, globalized food systems, and inequitable resource distribution, to name a few. Brockton is one city among many in Massachusetts and across the United States that is asking the difficult questions about how agriculture can best serve its urban communities. There is much to learn from cities like Springfield, Boston, and Somerville in Massachusetts, and from Baltimore, Providence, Cleveland, Seattle, Chicago, and Milwaukee. By learning from their experiences, as a government and as a community, Brockton will be able to fully embrace its role in the southeastern Massachusetts food system.

APPENDICES

A MAPS

CITY OF BROCKTON BASE MAP

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)

City of Brockton, Planning Department:
Tax Parcels

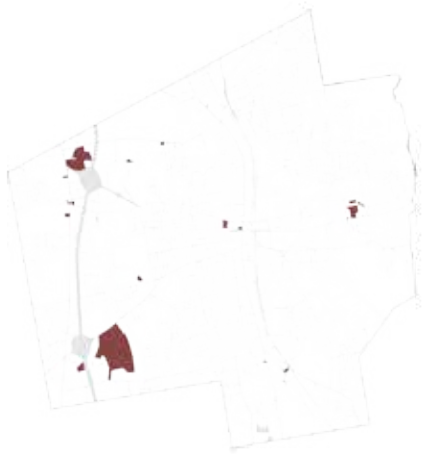
AREAS WITHIN A TEN-MINUTE WALK TO A SCHOOL

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)

City of Brockton, Planning Department:
Tax Parcels

AREAS WITHIN A TEN-MINUTE WALK TO A BAT ROUTE

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)
Brockton Area Transit Layer



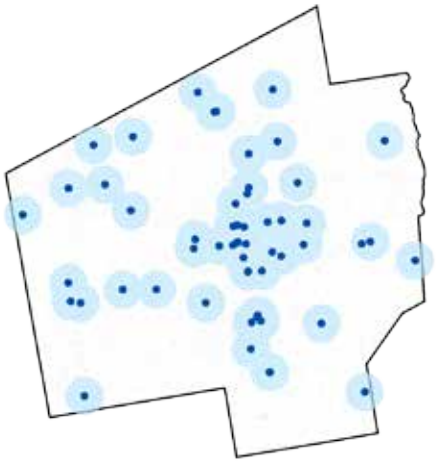
HOSPITALS AND HEALTHCARE FACILITIES

Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

City of Brockton, Planning Department:

Tax Parcels



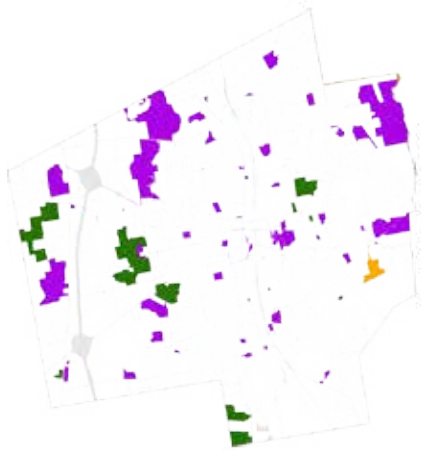
AREAS WITHIN A TEN-MINUTE WALK TO A HOUSE OF WORSHIP

Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

City of Brockton, Planning Department:

Tax Parcels



PARKS AND OPEN SPACE BY OWNER

Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

City of Brockton, Planning Department:

Open Space

Land Use (2016)

Tax Parcels

WATERWAYS AND WATER BODIES

Massachusetts Office of Geographic Information (MassGIS):

MassDEP Hydrography (1:25,000)

USGS Major Ponds and Major Streams

City of Brockton, Planning Department:

Wetlands

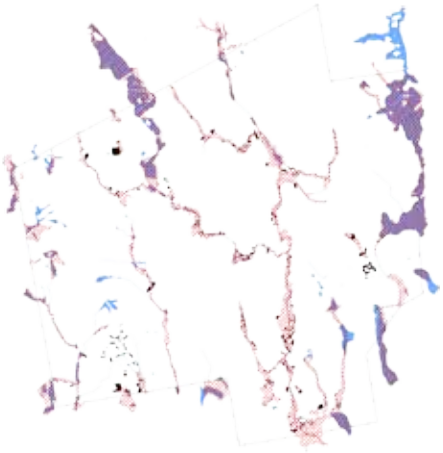
IMPERVIOUS SURFACES AND FEMA FLOOD ZONES

Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

FEMA National Flood Hazard Layer

Impervious Surfaces



STRUCTURES IN FLOOD ZONES

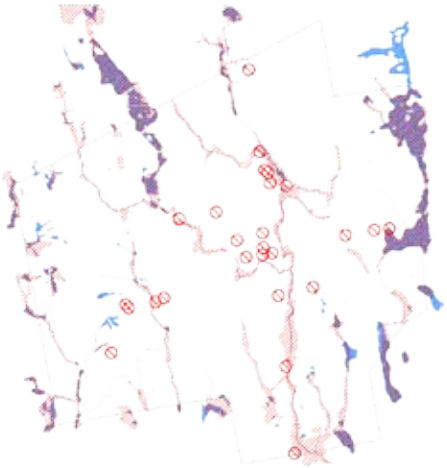
Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

FEMA National Flood Hazard Layer

City of Brockton, Planning Department:

Structures



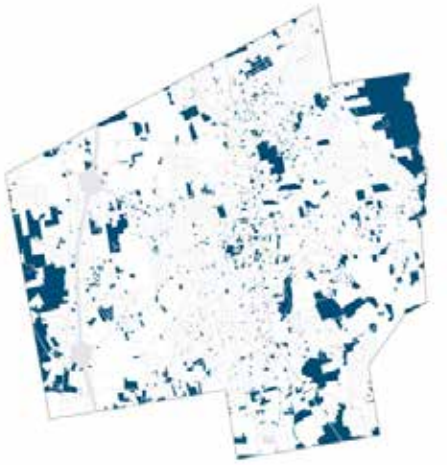
MASS DEP HAZ-MAT SITES AND FLOOD ZONES

Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

FEMA National Flood Hazard Layer

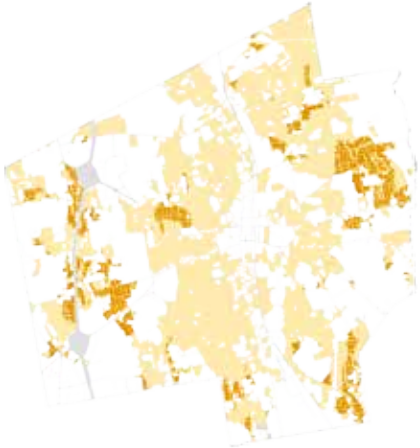
MassDEP Oil and/or Hazardous Material Sites with Activity and Use Limitations (AUL)



VACANT PARCELS IN BROCKTON

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)
FEMA National Flood Hazard Layer
Impervious Surfaces
NRCS SSURGO-Certified Soils
NHESP Natural Communities
BioMap2
Prime Forest Land

City of Brockton, Planning Department:
Tax Parcels
Vacant Parcels
Vacant No Structure Parcels
COB Parcels
Wetlands



RESIDENTIAL PARCELS AND FARMLAND SOILS

Massachusetts Office of Geographic Information (MassGIS):

Community Boundaries (Cities and Towns)

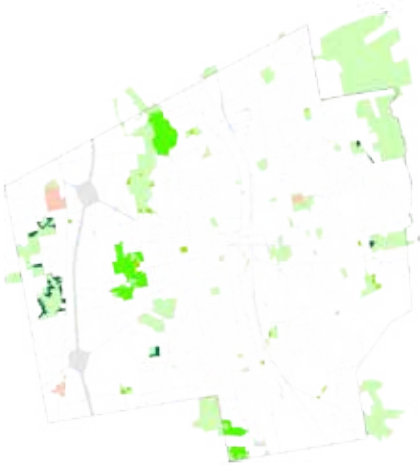
NRCS SSURGO-Certified Soils

Land Use (2005)

City of Brockton, Planning Department:

Tax Parcels

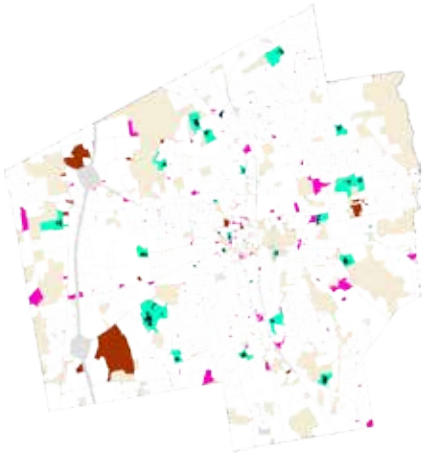
Land Use (2016)



PARKS AND OPEN SPACE BY TYPE OF USE

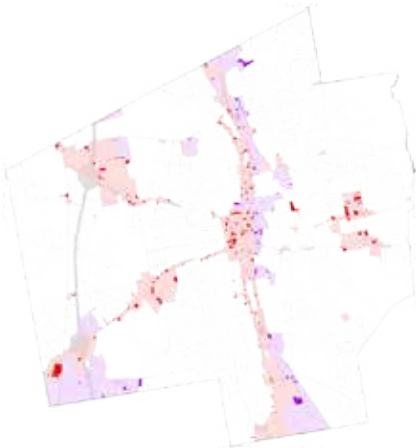
Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)
NRCS SSURGO-Certified Soils
Land Use (2005)

City of Brockton, Planning Department:
Tax Parcels
Open Space (2016)
Land Use (2016)



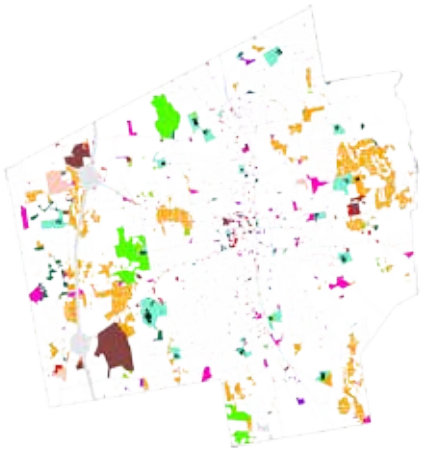
SCHOOLS, CHURCHES, AND CIVIC PARCELS

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)
City of Brockton, Planning Department:
Tax Parcels
Land Use (2016)
Structures (2016)



VACANT INDUSTRIAL AND COMMERCIAL STRUCTURES

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)
FEMA National Flood Hazard Layer
City of Brockton, Planning Department:
Tax Parcels
Land Use (2016)
Wetlands
Structures (2016)



LAND USE AND AREAS OF INTEREST FOR URBAN AGRICULTURE

Massachusetts Office of Geographic Information (MassGIS):
Community Boundaries (Cities and Towns)
NRCS SSURGO-Certified Soils
Land Use (2005)
FEMA National Flood Hazard Layer
Impervious Surfaces
NRCS SSURGO-Certified Soils
NHESP Natural Communities
BioMap2
Prime Forest Land

City of Brockton, Planning Department:
Open Space
Land Use (2016)
Tax Parcels
Structures
Vacant Parcels
Vacant No Structure Parcels
COB Parcels
Wetlands

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D GLOSSARY

Food Policy Council: A Food Policy Council (FPC) consists of a group of representatives and stakeholders from many sectors of the food system. Ideally, the council includes participants representing all five sectors of the food system (production, consumption, processing, distribution and waste recycling). They often include anti-hunger and food justice advocates, educators, nonprofit organizations, concerned citizens, government officials, farmers, grocers, chefs, workers, food processors and food distributors. Food Policy Councils create an opportunity for discussion and strategy development among these various interests, and create an arena for studying the food system as a whole. Because they are often initiated by government actors, through executive orders, public acts or joint resolutions, Food Policy Councils tend to enjoy a formal relationship with local, city or state officials.

Agriculture Commission: A town agricultural commission (AgCom) is a standing committee of town government, created through a vote of Town Meeting and appointed by the City Council or governing body of the town. AgComs represent the farming community, encourage the pursuit of agriculture, promote agricultural economic development and protect farmlands and farm businesses, and preserve, revitalize and sustain agricultural businesses and land. In some communities they focus on farmland preservation efforts, while in others they review regulatory proposals developed by other town boards (planning board, board of health, conservation commission, etc), or provide marketing coordination to assist all farms in town. Others have played key roles in mediating farmer/neighbor disputes, or simply providing referrals for farmers needing better information.

Urban Agriculture Coalition: This is an alliance formed of distinct parties, persons, or states for joint action to advocate for healthy food, jobs, economic development, and to amend laws that impede urban agriculture. Their work can also aim to create practical economic development opportunities, improve food security, and provide solutions to blight caused by unmaintained vacant lots.

Urban Garden District: Established as part of the zoning code to "ensure urban garden areas are located and protected to meet the needs for local food production, community health, community education, garden-related job training, environmental enhancement, preservation of green space, and community enjoyment on sites for which urban gardens represent the best use for the community." (City of Cleveland)

Community Garden: Land located on public or private property that is "managed and maintained by a group of individuals," organization, or congregation "to grow and harvest food crops and/or non-food, ornamental crops for personal or group use, consumption or donation." (City of Cleveland)

Market Garden: Land on public or private property "managed and maintained by an individual or group of individuals," organization, or congregation "to grow and harvest food and/or non-food, ornamental crops to be sold for profit." (City of Cleveland)

Neighborhood Planning Unit: "A voluntary, citizen-based advisory council that meet to discuss and provide recommendations to the City Planning Department and Mayor's office on zoning, land-use, development, and other planning-related issues." (City of Atlanta)

Community Coproduction: The provision of services between a city department or service provider and users of those services, where all parties make substantial resource contributions.

Incubator Farm: Agricultural operations where beginning farmers are provided land, tools, mentorships and additional resources for starting up farms or farm-related enterprises. Examples of incubator operations include beginning vegetable and flower farms, livestock operations, and small grain operations. Orchards and berry farms may also begin at incubator farms.

Farm to Institution and Farm to School: Farm to institution is a cooperative effort among various stakeholders enabling local farmers and food producers to sell food to institutional clients including schools and healthcare facilities. Participating stakeholders including farms, food-service professionals, community members, educators, administrative and government staff, city and county health officials explore issues and concerns related to food safety, availability and affordability, food education, marketing and public. Outreach and consulting is often facilitated by a food policy council.

E ORDINANCE TEMPLATE

Excerpted from: *Seeding the City: Land Use Policies to Promote Urban Agriculture*

ANIMALS

	Home Garden	Community Garden	Urban Farm
Beekeeping con't	***Comment con't:*** *…parallel to any lot line within 25 feet of a hive and extending at least 20 feet beyond the hive in both directions.*[91] *Several cities require minimum lot sizes for the keeping of colonies. Cleveland requires a minimum lot size of 2,400 square feet to host a hive.*[92] *Seattle allows for no more than four hives, each with only one swarm, on lots containing less than 10,000 square feet.*[93] *The City of Vancouver allows two hives on lots containing less than 10,000 square feet.*[94]		
Chickens	The keeping of hens is a [*permitted accessory*] use to a home garden, subject to the following regulations: The chicken owner is properly registered and licensed pursuant to [*state/local*] law; Animal care practices are consistent with the standards of [*enter reference to animal welfare laws or organization name here*]; There must be no less than [*10*] square feet allocated per chicken; The coops or cages housing the chickens may not be located in the front or side yard areas and shall not be located within [*five feet*] of the property line. The chickens, coops, and cages must be adequately maintained to control odor and prevent infestation. [*No more than [4] hens may be permitted per home garden.*] ***Comment:*** *Some communities permit the raising of hens in home gardens for personal use (i.e., no chicken or egg sales or slaughtering) as a permitted accessory use (i.e., without requiring any land use permits).*[95]	The keeping of hens is a [*permitted accessory*] use to a community garden, subject to the following regulations: The chicken owner(s) is properly registered and licensed pursuant to [*state/local*] law; There must be no less than [*10*] square feet allocated per chicken; The coops or cages housing the chickens may not be located in the front or side yard areas and shall not be located within [*five feet*] of the property line. The chickens, coops, and cages must be adequately maintained to control odor and prevent infestation. [*No more than [5] hens may be permitted per community garden.*] ***Comment:*** *See comments under "Home Garden." Like beekeeping, some communities will not want to permit the keeping of chickens in community gardens without further approvals.* *Allowing animals in community gardens presents the problem of oversight as gardeners may not attend to the garden every day.*	The keeping of hens is a [*permitted accessory*] use to an urban farm, subject to the following regulations: The chicken owner is properly registered and licensed pursuant to [*state/local*] law; There must be no less than [*10*] square feet allocated per chicken; The coops or cages housing the chickens may not be located in the front or side yard areas and shall not be located within [*five feet*] of the property line. The chickens, coops, and cages must be adequately maintained to control odor and prevent infestation. [*No more than [n] hens may be permitted per urban farm.*] ***Comment:*** *See comments under "Home Garden" and "Community Garden." Depending upon where the urban farms are located, communities may wish to permit additional hens and require fewer square feet per chicken and lesser setbacks from adjoining property.*

ANIMALS

	Home Garden	Community Garden	Urban Farm
Chickens con't.	***Comment con't:*** *Regulations regarding the number of chickens permitted, the space allocation per bird, and the size or type of structure vary across cities; there is no gold standard as of yet.* *Factors such as climate, density of the environment, and the type or urban predators impact standards. One option is to limit the total number of birds per lot regardless of lot size, or to limit the number by virtue of lot size. Another option is to allow a certain number of birds as a permitted use and require a conditional use permit to exceed those standards.* *Some communities permit only hens and prohibit or limit the keeping of roosters due to concerns about noise and cockfighting operations. Some communities, including Cleveland and Seattle, allow a variety of domestic fowl.* *Cleveland requires a minimum of 100 square feet per animal (fowl and rabbits). It requires coops and cages to be located more than five feet from a side yard and 18 inches from a rear yard.*[97] *Seattle does not expressly address the amount of space per bird and allows up to 8 domestic fowl on any residential lot as a permitted accessory use. Structures housing domestic fowl must be located at least 10 feet from any structure that includes a dwelling unit on an adjacent lot.*[98] *Vancouver requires structures to be more than one meter from any property line.*[99] *It prohibits roosters and limits backyard hens to four per lot.*[100] *Animal Welfare Approved requires 1.8 square feet of indoor space and an additional 4.0 square feet of additional foraging area for a total of 5.8 square feet minimum space per chicken.*[101] *Animal slaughtering and sales and the sale of eggs are regulated by federal and, often, state laws.*	***Comment con't:*** *Some cities only permit animals on property where there is residence, presumably to ensure that caretakers manage the animals regularly and are more easily identified and held accountable for nuisance or animal welfare violations.*	

F LEGISLATION

Bill No. 1465. HB: 891, "An Act Relative to Non-Contiguous Farm Land"

Whenever an owner hold two or more non-contiguous areas of land in one or more subdivisions of the commonwealth equaling not less than five acres, said owner shall have right to apply for the provisions of this section provided all parcels are within a 10-mile radius of one another, or within the confines of a single municipality. Said acreage shall meet all the requirements for the benefits of this section as if the land was contiguous.

Bill No. 292. SN: 1313, "An Act Authorizing School Districts to Donate Excess Food to Local Voluntary Assistance Programs."

The [educational] board shall develop guidelines for the voluntary implementation by school districts of programs that encourage and facilitate the ability of school districts to donate excess, unconsumed, and edible food and beverages from meals served at such educational facilities to local food assistance programs including, but not limited to, community food pantries, soup kitchens, and other community and not-for-profit organizations that distribute food to the poor and disadvantaged. Such guidelines may include but are not limited to a methodology to provide information to educational institutions and local voluntary food assistance programs of the provisions of such guidelines, notification to educational institutions of their ability to elect to donate excess, unconsumed, and edible food and beverages to local voluntary food programs, and the provision of information and technical assistance on the manner of how to best donate excess food in a safe and sanitary manner.

Bill No. 242. SN: 1986, "An Act Regarding Breakfast in the Classroom."

All public K-12 schools that are required to serve breakfast under section 1C of chapter 69 of the General Laws were at least sixty percent or more students eligible for free or reduced-price meals under the federal National School Lunch Program shall be required to offer all students a school breakfast after the instructional day has begun and the tardy bell rings.

In fulfilling its responsibilities under this section, the State Department of Elementary and Secondary Education shall collaborate with nonprofit organizations knowledgeable about equity, the opportunity gap, hunger and food security issues, and best practices for improving student access to school breakfast.

SN: 4409, "An Act Relative to Healthy Eating in the Classroom."

Section 1: The MA school building authority shall appropriate a three-year pilot program for up to one school per year to update school kitchens for fresh food preparation and storage.

Schools electing to participate shall be eligible for financial support of up to 70 percent of the cost for updating the kitchen, as determined by the Authority, using criteria established pursuant to this section.

[...]

Section 2: (a) The department of agricultural resources, inc conjunction with the department of elementary and secondary education and the department of public health, shall, subject to appropriation, develop a 4-year pilot program to create a farm-to-school community challenge. The goals of the farm-to-school pilot program will be to promote locally grown food as well as nutritious school meals with the purpose of providing evidence that communities gain positive changes in the eating habits of children and adolescents, improve access to local foods in eligible schools, increase the supply of fresh, locally grown farm products served for meals and snacks in public elementary and second schools, and incorporate better education and engagement around healthy food choices.

[...]

Bill No. 1532. SN: 2030, "An Act to Promote Urban Agriculture and Horticulture."

Up to 100% of the assessed value of real estate in agricultural or horticultural use, as those terms are defined in Sections 1 and 2 of Chapter 61A, provided that the real estate or portion thereof in agricultural or horticultural use is more than a tenth of an acre, but less than two acres in area. The exemption provided in this clause shall apply only to the portion of real estate in agricultural or horticultural use. Any part of any such real estate that is used for other than agricultural or horticultural uses, shall not be exempt under this clause. This clause shall take effect in any city or town with a population of 50,000 inhabitants or more upon acceptance by such city or town. The legislative body of any city or town that accepts this clause shall establish and may thereafter modify the percentage of the assessed value exempt from taxation.

G PHOTOS

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ABOUT THE AUTHORS

Andrew Kilduff

Andrew grew up in New Jersey within a short drive of wild ridge-and-valley landscapes and America's quintessential metropolis, New York City. Living in such a complex landscape led him to the question: is our presence within this landscape a sustainable one? A search for answers eventually led to farming. Since then, Andrew has explored agriculture as a potential solution to improve welfare of urbanites and the cities they inhabit. He has farmed over four years in three states, designed and installed landscapes for farms, private residences and estates, and co-managed a cross-country farm-to-table dining-event company. Andrew holds a degree in Geography and Agroecology from Rutgers University and certificate in Sustainable Farming from the University of Vermont. Outside of his studies he can be found trying his best to cook the day's fresh picks, building in the workshop, or drawing.

Tim Tensen

A professional jazz musician, amateur cartographer, and voracious reader, Tim initiated his career in environmental design by working on organic farms across the country for three years. He has worked as a consultant with ecological landscaping businesses in Seattle, Boston, and northern California. Acting as a sub-contractor on jobs as diverse as installation of full-house greywater treatment systems, living roof installation, vineyard management, greenhouse management, and landscape construction, Tim has acquired a broad range of professional skills. He bolstered his studies by traversing South America from Peru north to Nicaragua, visiting agrarian communities and a variety of forest farming practices. Tim aims to formalize these experiences into a career in planning and design through his studies at the Conway School.

In cities across the United States and beyond, urban agriculture has brought diverse urban communities together, humanized vacant and derelict sites, grown nutritious produce that reduces household food expenses, and provided valuable job training and educational opportunities. Prompted by a need to address the growing number of residents raising chickens, city officials and community members of Brockton, Massachusetts, are interested in strategies for implementing, supporting, and regulating sustainable urban agriculture.

This plan evaluates the benefits of and obstacles to urban agriculture in Brockton, explores community visions of what urban agriculture could look like in Brockton, and ends with recommendations to help the community coordinate agriculture-related efforts and develop sound policy supporting urban agriculture.

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